550 071 7

Silvelox Quality System

INSTALLATION MANUAL

Product: Trento Collection - Overlap sectional garage door

Model: OVERLAP 2.0

Operation: Manual and automatic

Rev. 06 (Sept 2013)

For Residential Use Only

Manufacturer: **SILVELOX S.p.A.**
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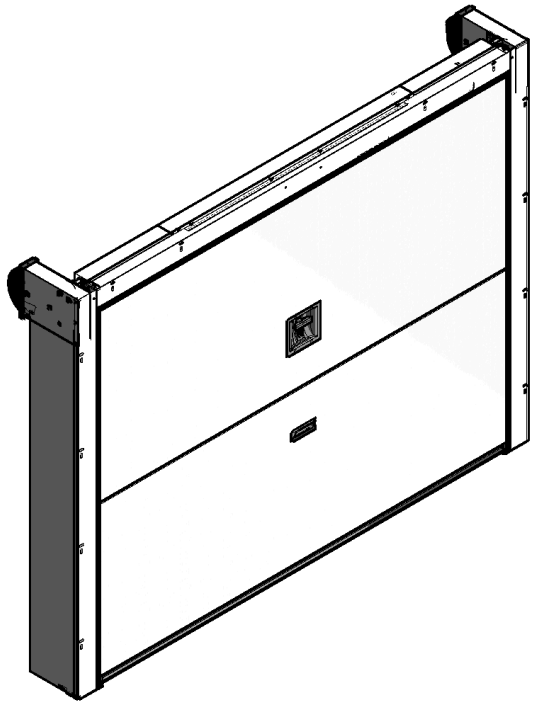

TRENTO COLLECTION

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1 PREFACE

Dear customer, we want to inform you about the installation and safety procedures for a correct set-up of the Overlap garage door designed by Silvelox. If you correctly follow all the instructions, the product will work as expected. The garage door is typically the largest moving object in the house. Improper installation, operation or maintenance of a garage door can create a hazardous condition that can cause serious injury or even death.

WARNING
In the interest of safety this symbol means WARNING or CAUTION. Injury to people and/or property damage may occur unless instructions are followed correctly.

WARNING
In the interest of safety this symbol means WARNING. Injury to people and/or property damage may occur from electrocution or fire unless instructions are followed correctly.

2 PRELIMINARY CHECKS

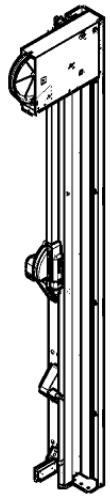
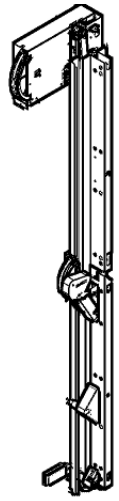
Your garage door is packaged in a single crate which contains the documentation and all parts listed below. If anything is missing, carefully check the packing material as parts may be stuck in the foam. Tools needed are also listed below.

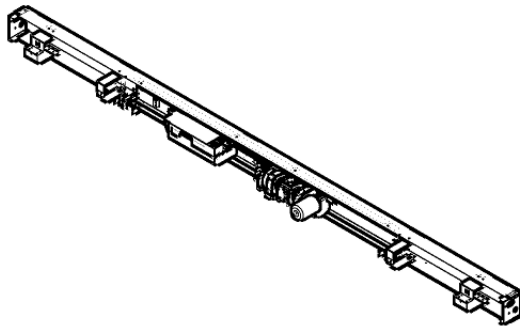
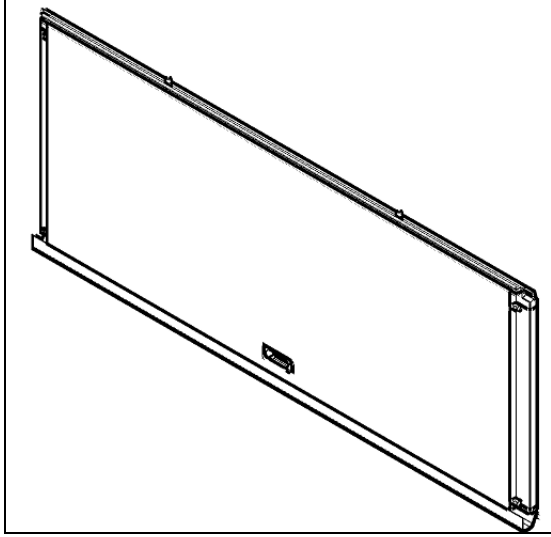
2.1 Documentation and label inventory

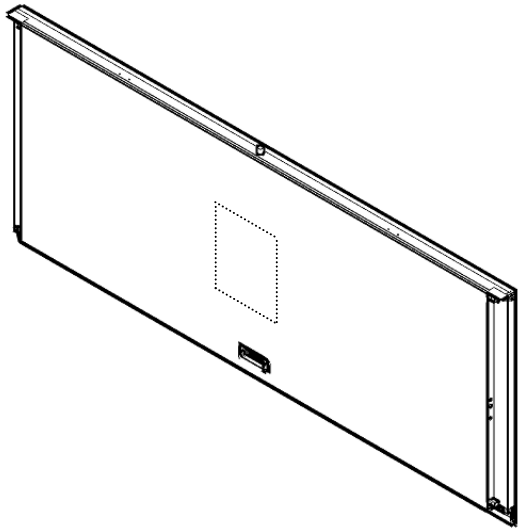
- Warnings labels for handling the packaging: follow the handling instructions listed on the packaging label.
- Acceptance report attached to the packaging lists the contents.
- Owner's manual includes operations and maintenance instructions. Please give Owner's Manual to the homeowner.
- Installation manual instructs technicians how to install a door.
- ID label describes the technical characteristics of the door and is placed on the interior side of the upper panel.
- General warning label includes safety instructions for the garage door operation and is placed on the interior side of the upper panel.
- Release handle warning label is placed on right counterbalance cover, just behind the release handle.
- Wall control button warning label must be placed close to wall control, at least 5 feet above floor.
- Electric hazard warning label indicates the danger from accidental electrocution and is placed in the proximity of the cover containing the electric motor.

2.2 Box inventory

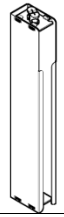
2.2.1 Main parts

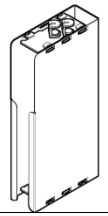
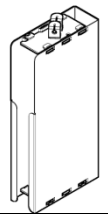
Preview	Item	Item QTY	Description
	**U1**	1	RIGHT UPRIGHT
	**U2**	1	LEFT UPRIGHT

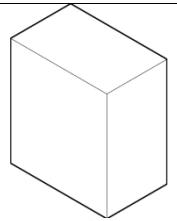
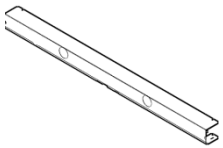
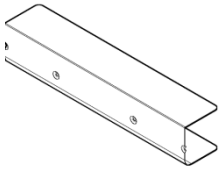
Preview	Item	Item QTY	Description
	**C1**	1	OPERATOR/ HEADBAR
	**P1**	1	LOWER PANEL

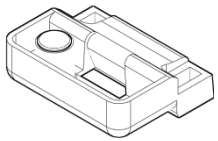
Preview	Item	Item QTY	Description
	**P2**	1	UPPER PANEL (may include cut out area, if door includes optional decorative hardware)

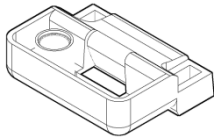
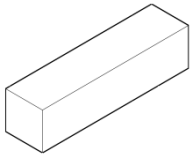
2.2.2 Secondary parts

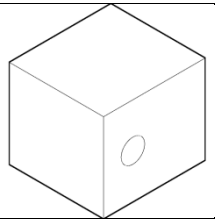
Preview	Item	Item QTY	Description
	B1	1	RIGHT NARROW COUNTERBALANCE BOX (color code: green)
	**B2**	1	LEFT NARROW COUNTERBALANCE BOX (color code: yellow)

Preview	Item	Item QTY	Description
	**B3**	1	RIGHT LARGE COUNTERBALANCE BOX (color code: blue)
	**B4**	1	LEFT NARROW COUNTERBALANCE BOX (color code: red)

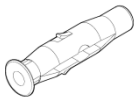
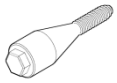
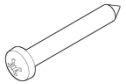
Preview	Item	Item QTY	Description
	**W1**	Based on door size	COUNTERBALANCE WEIGHT UNIT (color coded: yellow/green/red/blue)
	C2	1	RIGHT COUNTERBALANCE COVER
	C3	1	LEFT COUNTERBALANCE COVER
	**C4**	1	OPERATOR/HEADBAR CENTRAL COVER
	**C5**	2	HEADBAR SIDE COVER

Preview	Item	Item QTY	Description
	C6	1	RIGHT PULLY COVER
	C7	1	LEFT PULLY COVER
	C8	2	CENTRAL COVER CAP
	C9	1	OPERATOR RELEASE HANDLE
	**P3**	1	LEFT STRIKER (WITH MAGNET)

Preview	Item	Item QTY	Description
	**P4**	1	RIGHT STRIKER
	**D1**	1	50mm SPACER

Preview	Item	Item QTY	Description
	**D2**	4	30mm SPACER

2.2.3 Screws

Preview	Item	Item QTY	Description
	S1	19	TEB AB 6,3x60 ZNG SCREW, HEX CAP 10mm
	**S10**	17	FISCHER WALL ANCHOR, 10mm x 60mm
	**S2**	8	CONE SCREW, HEX CAP 10mm
	S3	4	TEB AB 6,3x16 ZNG SCREW, HEX CAP 10mm
	**S4**	34	TB 5x30 C15 ZNG WOOD SCREW, CROSS SLOTTED
	S5	32	STILE CAP
	S6	8	TBEI AB 6.3x16 ZN N SCREW, SOCKET HEAD 4mm
	S7	4	TB ST5,5x58-C-H ZN SCREW, CROSS SLOTTED
	S8	2	TEB AB 6,3x50 ZNG SCREW, HEX CAP 10mm

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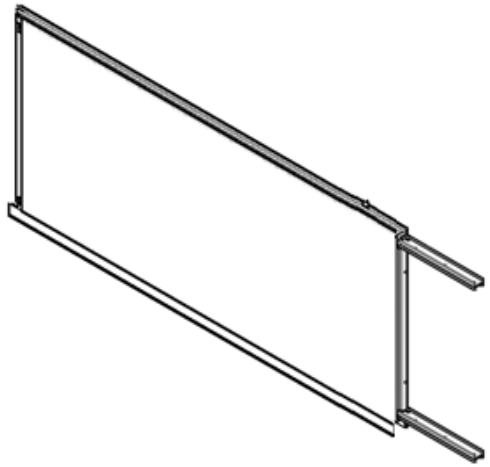
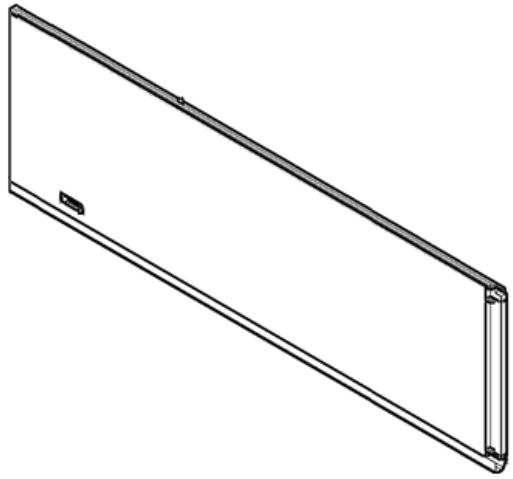
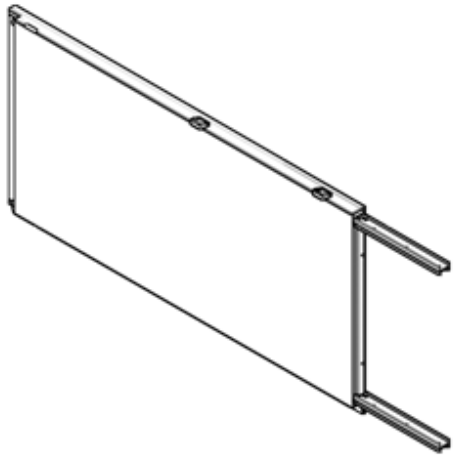
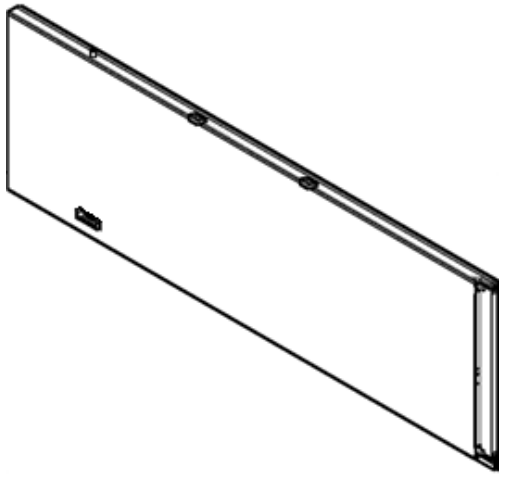
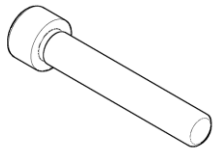
2.2.4 Doors wider than 10’ ONLY

Double Car (DC) doors come with panels that have to be assembled before installation. Instead having lower panel, P1, and upper panel, P2, in one piece, as reported in Section 2.2.1, the panels are composed by the following parts:

Preview	Item	Item QTY	Description
	**LP1**	1	LEFT HALF LOWER PANEL
	**RP1**	1	RIGHT HALF LOWER PANEL

Preview	Item	Item QTY	Description
	**LP2**	1	LEFT HALF UPPER PANEL
	**RP2**	1	RIGHT HALF UPPER PANEL

Preview	Item	Item QTY	Description
	P5	4	DC DOOR PANEL TIGHTENER

Preview	Item	Item QTY	Description
	**S9**	8	TCEI ISO 4762 - M10 x 60 ZN SCREW, SOCKET HEAD 8mm

2.2.5 Notes

- **The listed parts come pre-assembled; it is necessary to separate them before starting installation:**
  - Right upright + counterweights + cover (U1+B1+B3+W1+C2)
  - Left upright + counterweights + cover (U2+B2+B4+W1+C3)
  - Operator/headbar + covers (C1+C4+C5)
- The quantity of counterbalance weight units is variable depending on door size. Counterbalance boxes (B1,B2,B3,B4) and weight units W1 are color coded, i.e. they are marked with a common color to avoid any confusion during installation (Figure 2-1). **Please remove the weight units W1 from the counterbalance boxes before starting the installation.** During the installation you will be asked to place them back.

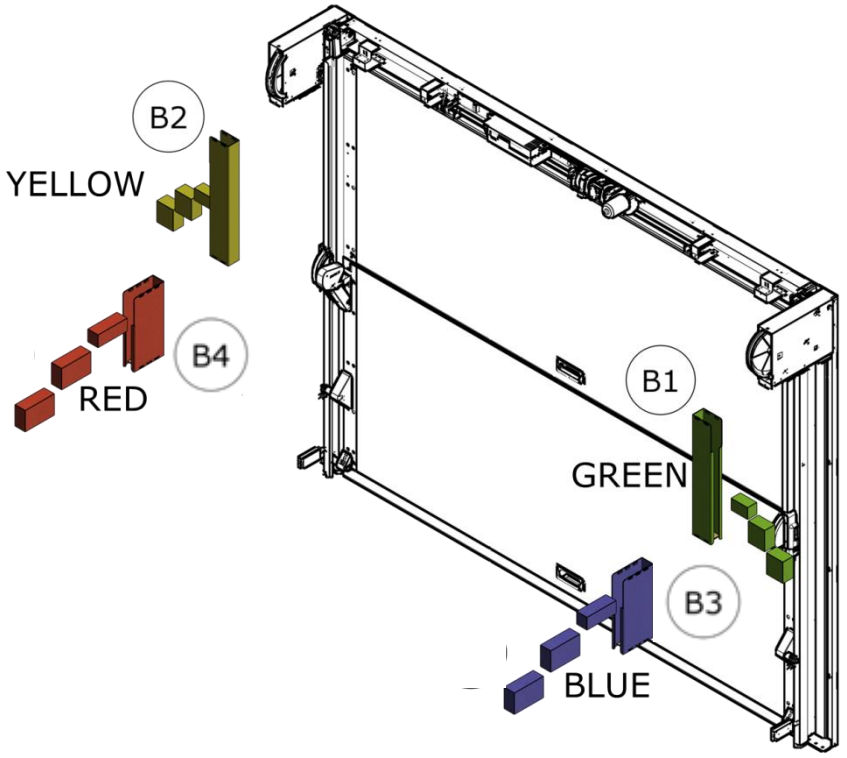


Figure 2-1

2.3 Tools needed

Before starting the door installation, be sure to have at hand all the tools listed below:

1. Knife/Boxcutter
2. 4 mm Allen wrench
3. 8mm Allen wrench (for Double Car doors only)
4. 13 mm wrench
5. 10 mm spark plug wrench, 200 mm long
6. Phillips head screwdrivers
7. Drill, with a 3/8''x10'' drill bit
8. Tape measure
9. Rubber hammer
10. 6' ladder
11. Level - 24'' or 48''

3 INSTALLATION

IMPORTANT INSTALLATION INSTRUCTIONS

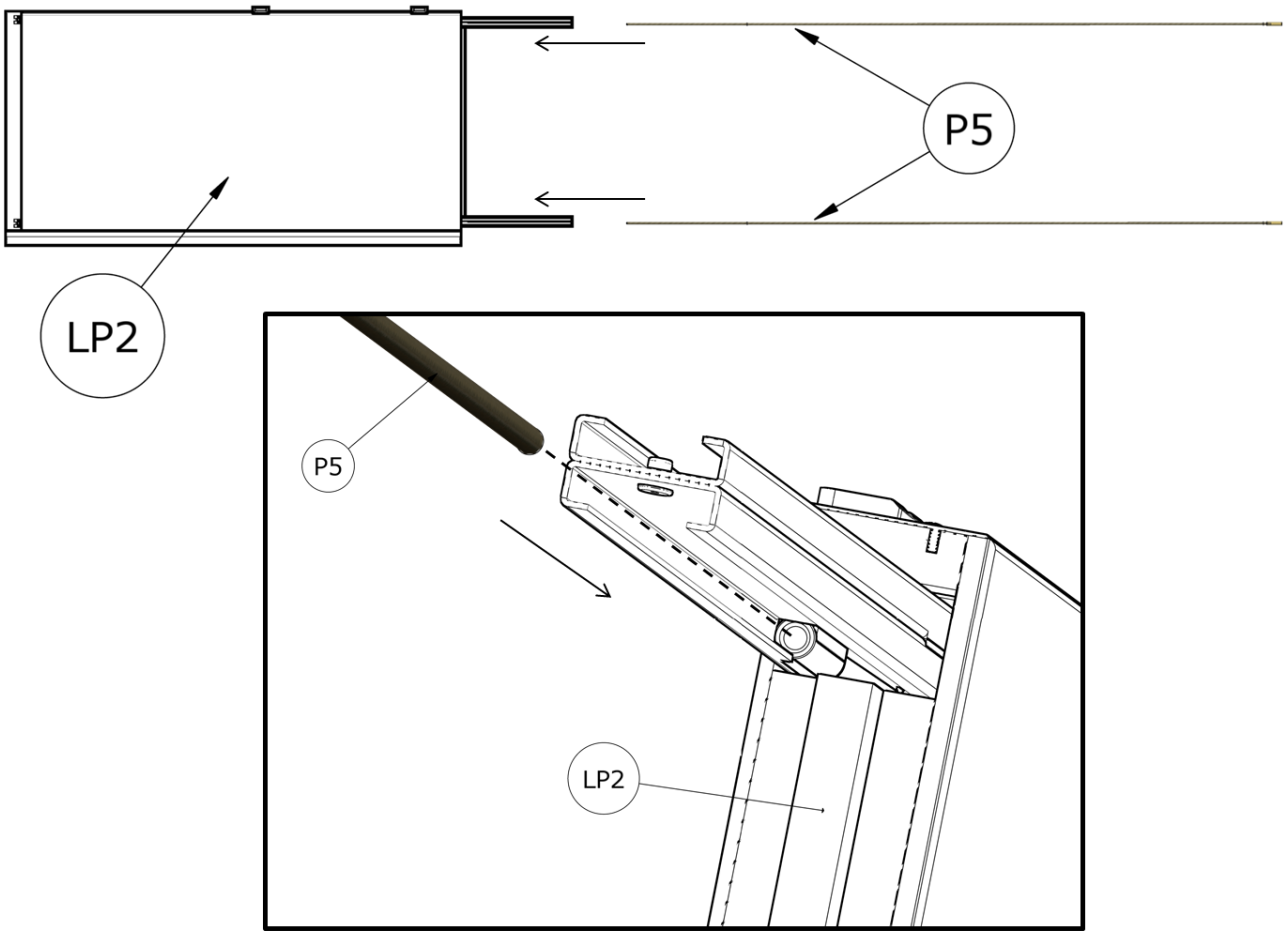
WARNING: To reduce the risk of severe injury or death

1. READ AND FOLLOW ALL INSTALLATION WARNINGS AND INSTRUCTIONS before to install, operate, perform maintenance or repair the garage door.
2. Install garage door opener ONLY on properly balanced and lubricated garage door. An improperly balanced door may not reverse when required and could result in SEVERE INJURY or DEATH.
3. Disable ALL locks and remove ALL ropes connected to garage door BEFORE installing opener to avoid entanglement.
4. Mount emergency release handle 6 feet (1.8 m) above floor.
5. NEVER connect garage door opener to power source until instructed to do so.
6. NEVER wear watches, rings or loose clothing while installing or servicing garage door. They could be caught in garage door or opener mechanisms.
7. Install wall-mounted garage door control:
   - within sight of the garage door.
   - out of reach of children at minimum height of 5 feet (1.5 m).
   - away from ALL moving parts of the door.
8. Place entrapment warning label on wall next to garage door control.
9. Place manual release/safety reverse test label in plain view on inside of garage door.
10. Upon completion of installation, test safety reversal system. Door MUST reverse on contact with a 1-1/2" (3.8 cm) high object (or a 2x4 laid flat) on the floor.
11. To avoid SERIOUS PERSONAL INJURY or DEATH from electrocution, disconnect ALL electric and battery power BEFORE performing ANY service or maintenance.

DOUBLE CAR (DC) DOOR PANEL SUPPLEMENT (1 of 3)

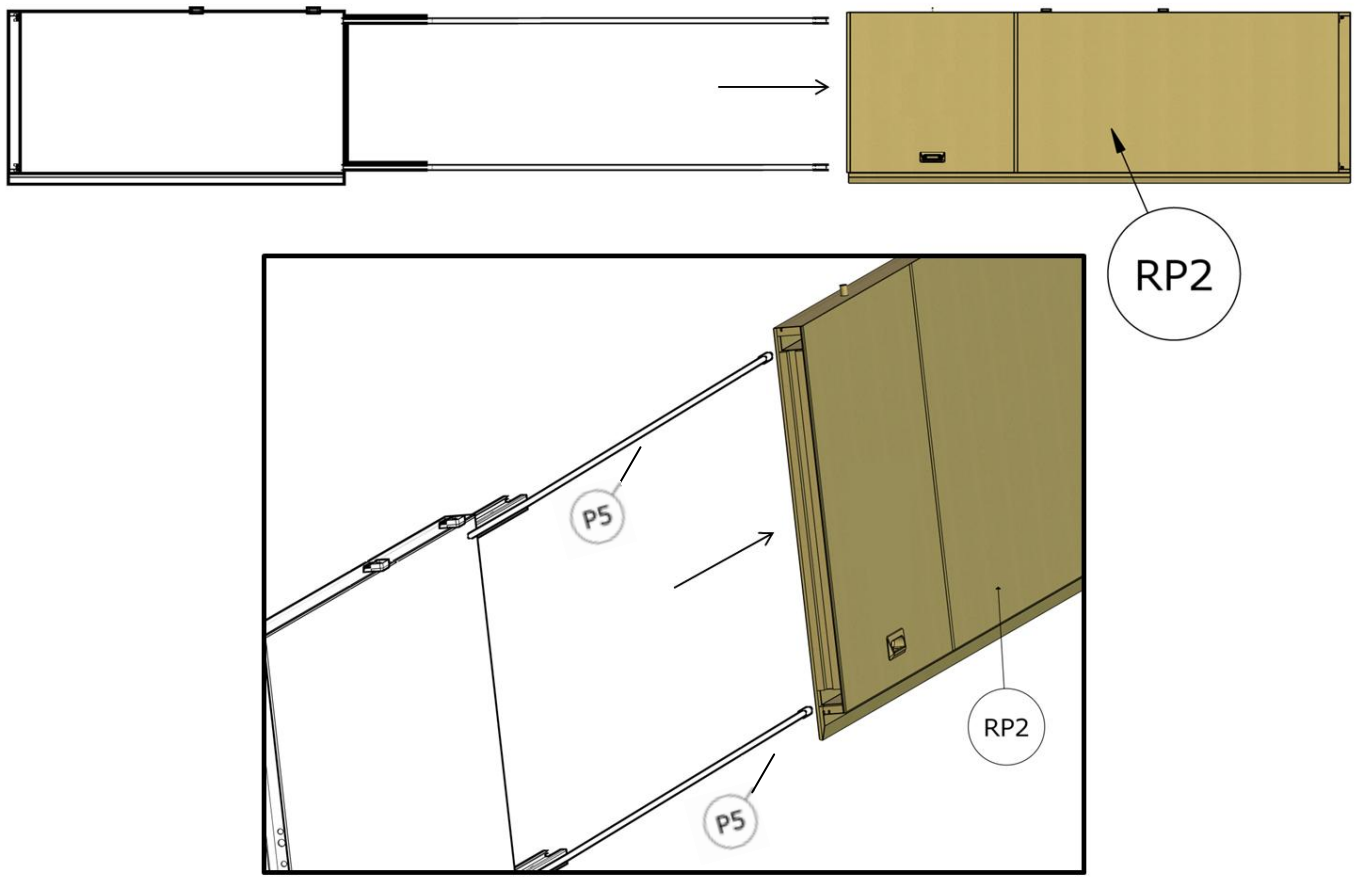
If installing a DC door (door width larger than 10’ wide), assemble the panels before installation.
Upper panel assembly ONLY is presented in this supplement.
Repeat the same steps for lower panel, replacing LP2 and RP2 with LP1 and RP1 respectively.

- Screw the two tighteners, P5, in the threaded holes of left half upper panel LP2. Detailed ilustration shows upper threaded hole only.



DC DOOR PANEL SUPPLEMENT (2 of 3)

- Insert the tighteners P5 into the right half upper panel, RP2 by carefully sliding the right half and left half together.

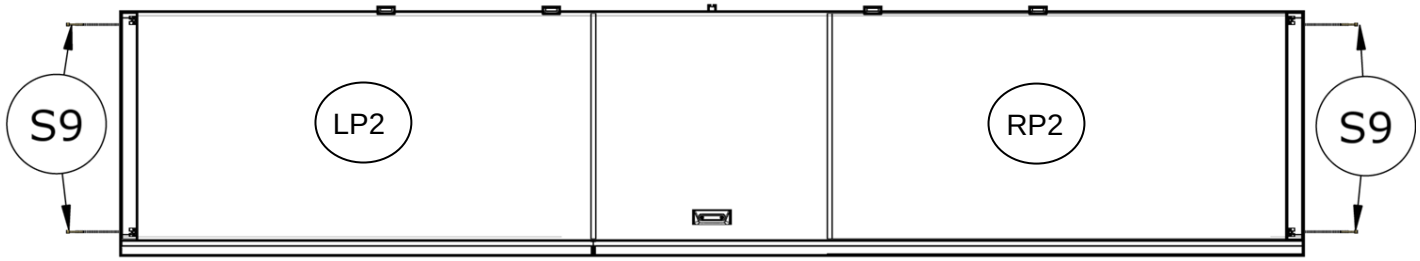


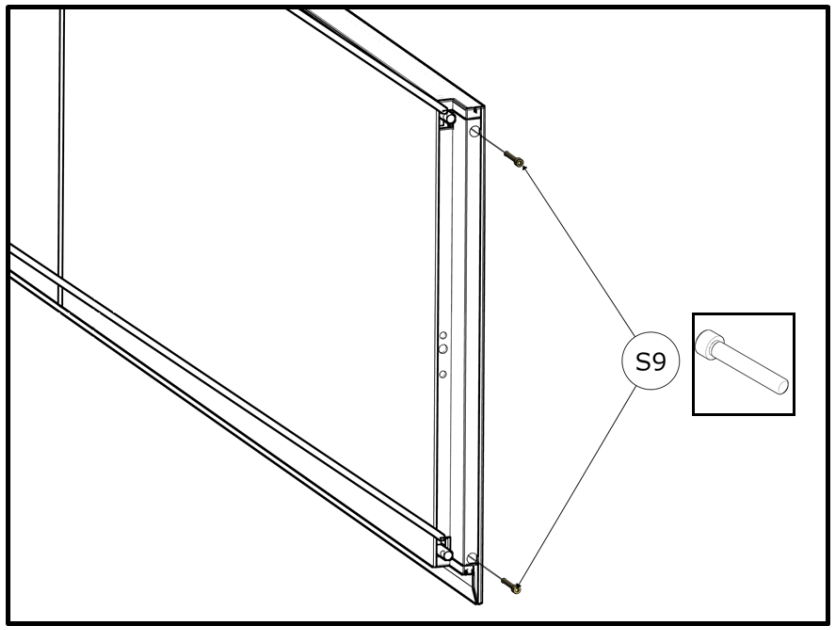
DC DOOR PANEL SUPPLEMENT (3 of 3)

- Secure the panel using four S9 screws.

NOTE: Fasten the S9 screws tightly.

Repeat the same steps of the supplement for lower panel, replacing LP2 and RP2 with LP1 and RP1 respectively.



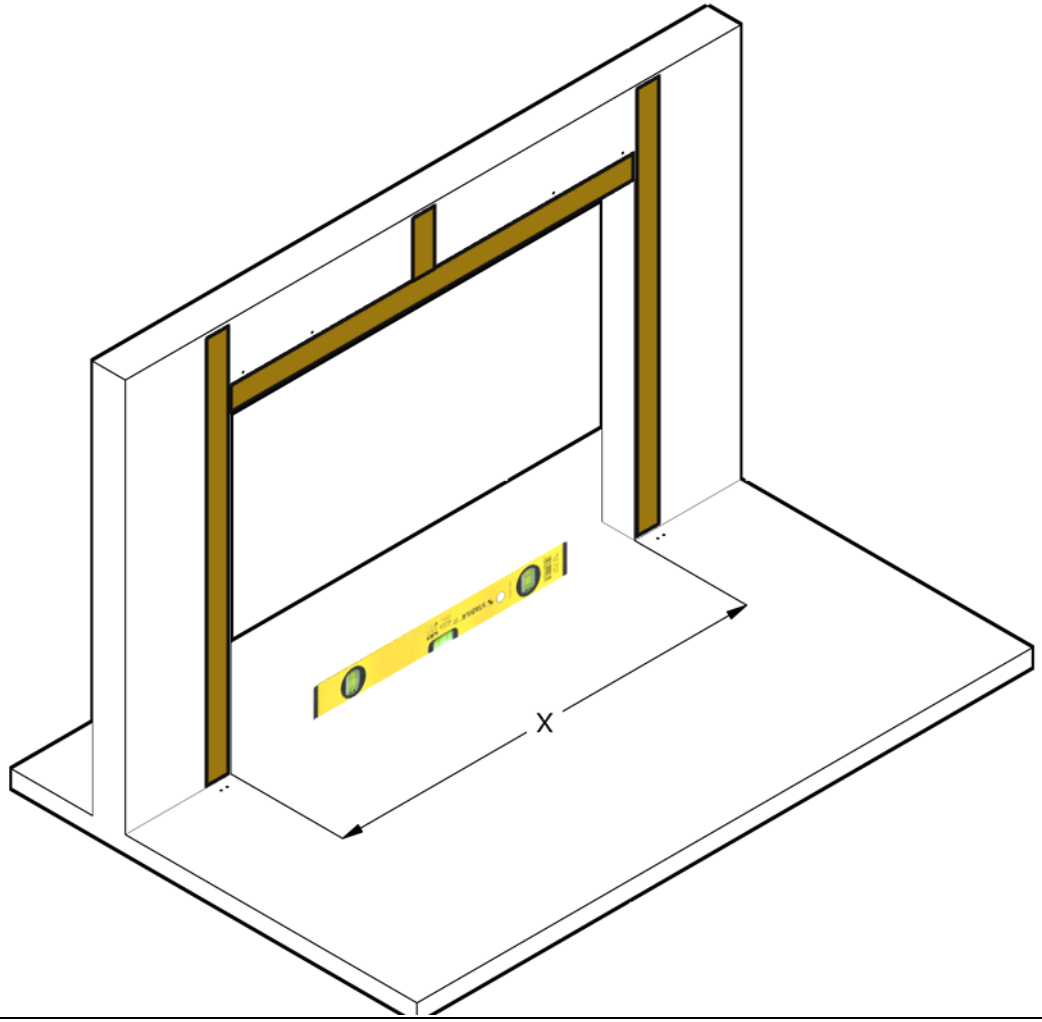


3.1 WALL OPENING

- Wood door jambs and 2X6 center pad must frame the door opening (#2 grade or better).
- Measure opening width, X.
- Check that floor is level.

NOTE: Wood door jambs are ONLY shown in this installation step. Assume jambs are present in all successive steps.

In case of a concrete or brick wall, see page 18 for installation instructions.



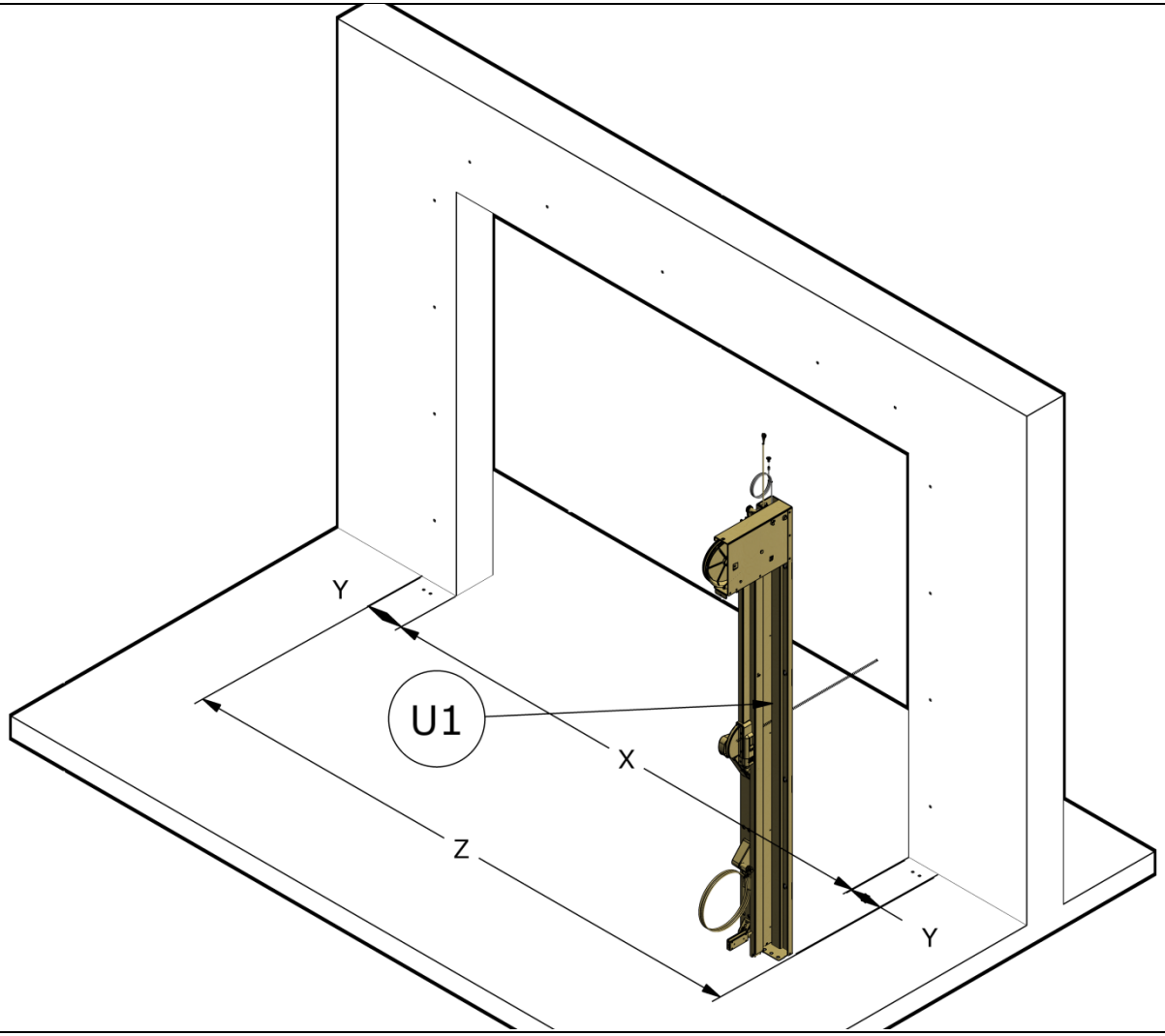
3.2 RIGHT UPRIGHT

- Place the first upright, starting from the highest side of the floor.
- Determine the width of the external frame, reference Y according the following rule:

  Y=(Z-X)/2

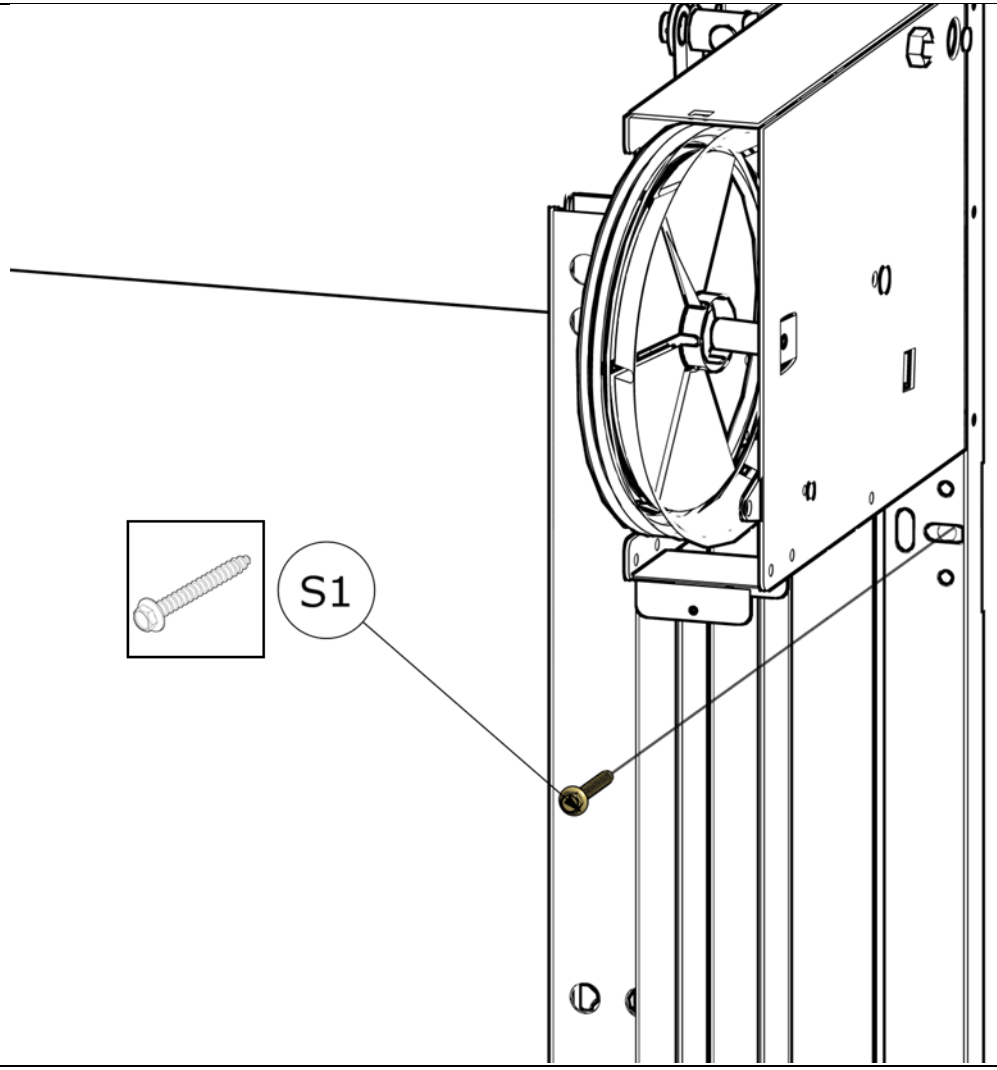
  where Z is the width of the external frame plus the opening width (approximately 11'' to nominal door width), and X is the door opening width.

  E.g.: if installing an 8' wide door, Z = 8'11''



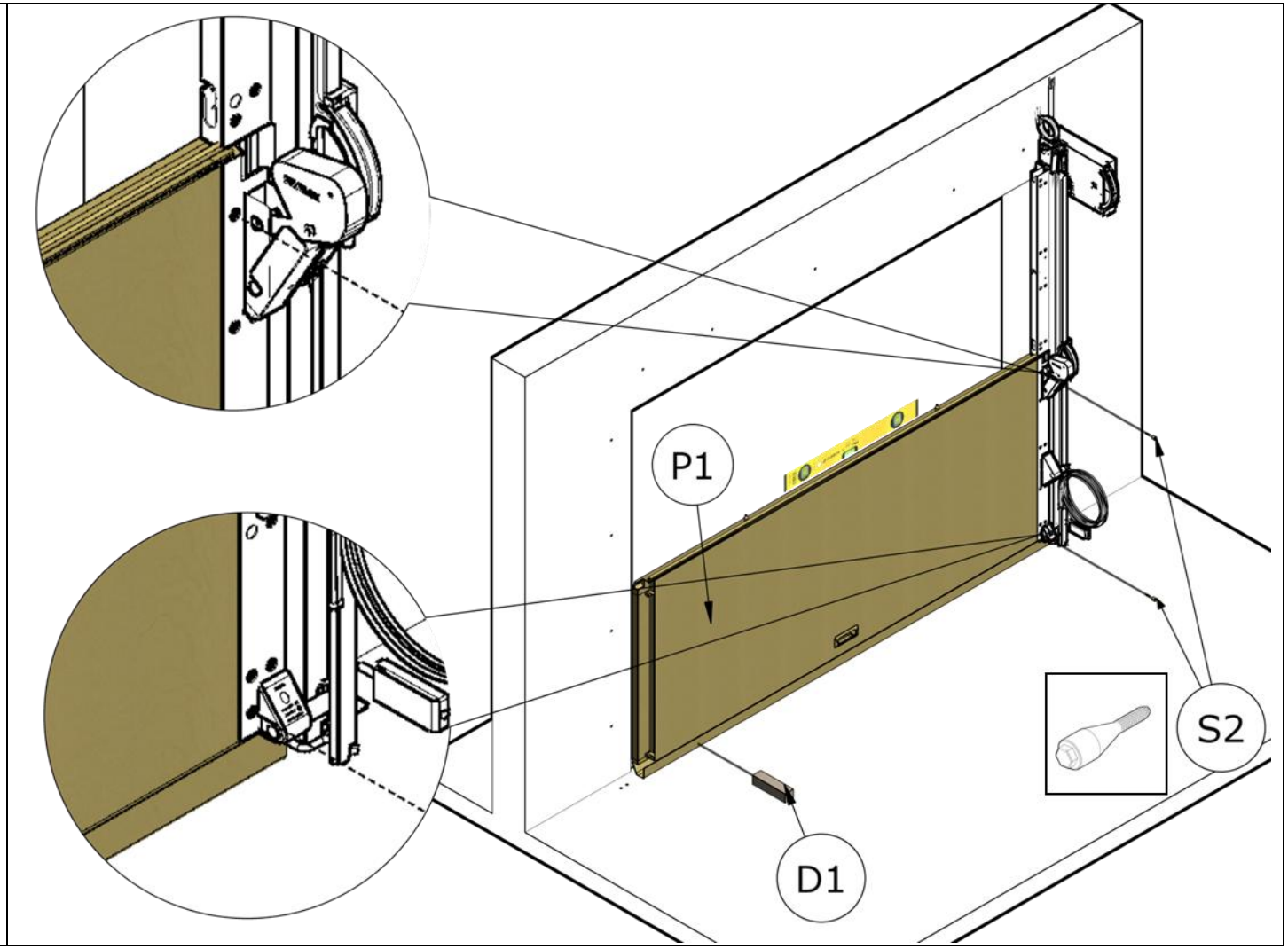
3.3 RIGHT UPRIGHT SECURING

- Secure the upright using the **horizontal** shaped hole as in the picture.
- Attach upright to wall using screw S1.
- **In case of a concrete or brick wall installation, insert a Fisher anchor, S10, in the wall hole.**
- Final attachment + adjustment will come later.



3.4 LOWER PANEL

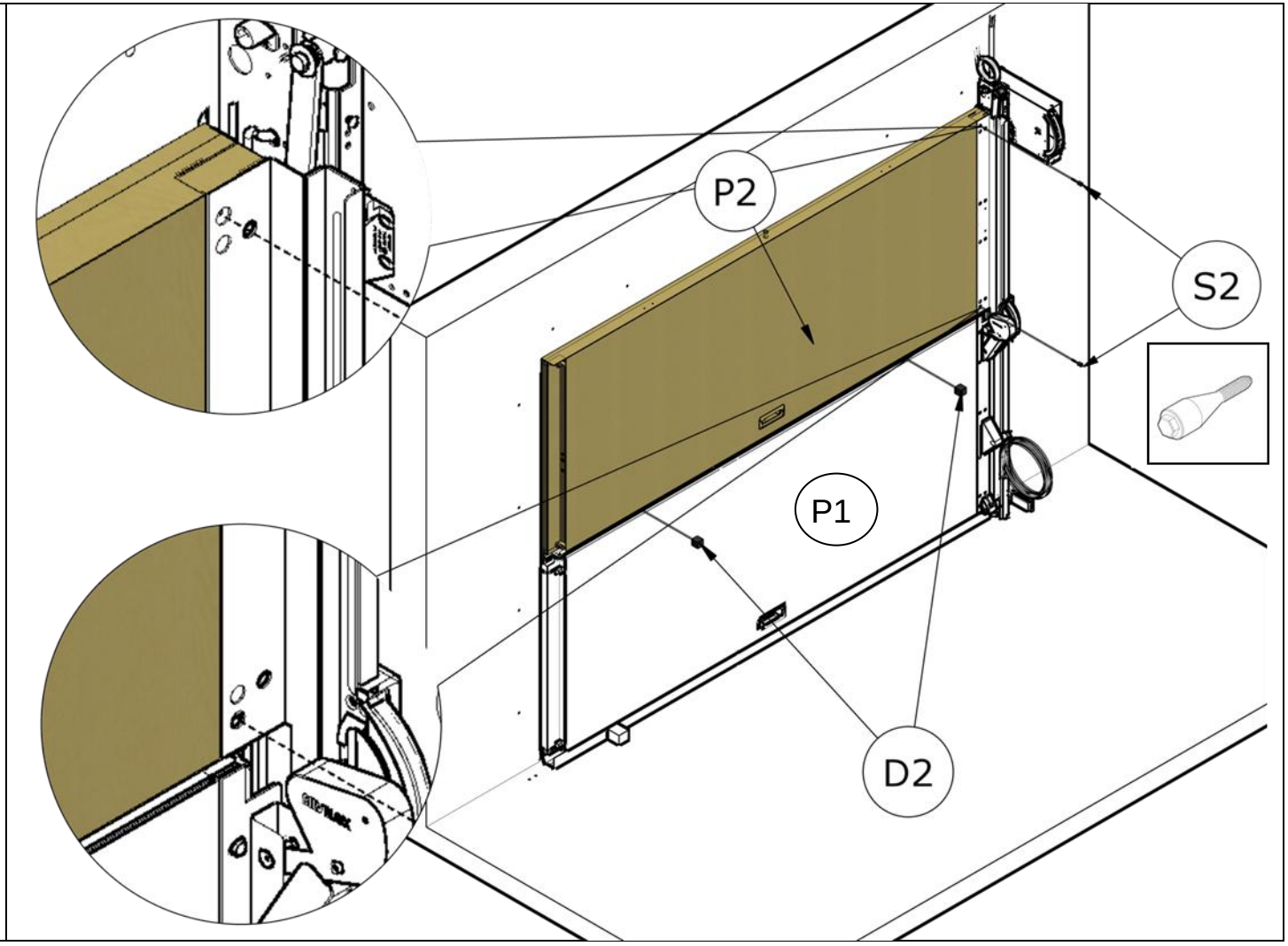
- Place panel P1 in the opening. Use spacer D1 to level the panel
- Attach P1 to upright using two S2 fasteners, starting with the top hole.



3.5 UPPER PANEL

- Before placing the panel, P2, put the spacers D2 above the lower panel 12” from each end.
- Place panel P2 on top of P1 and the spacers.
- Fasten P2 to the upright with two S2 fasteners.

NOTE: If your door will use outside decorative handles, then the upper panel will have a box on the interior (not shown).

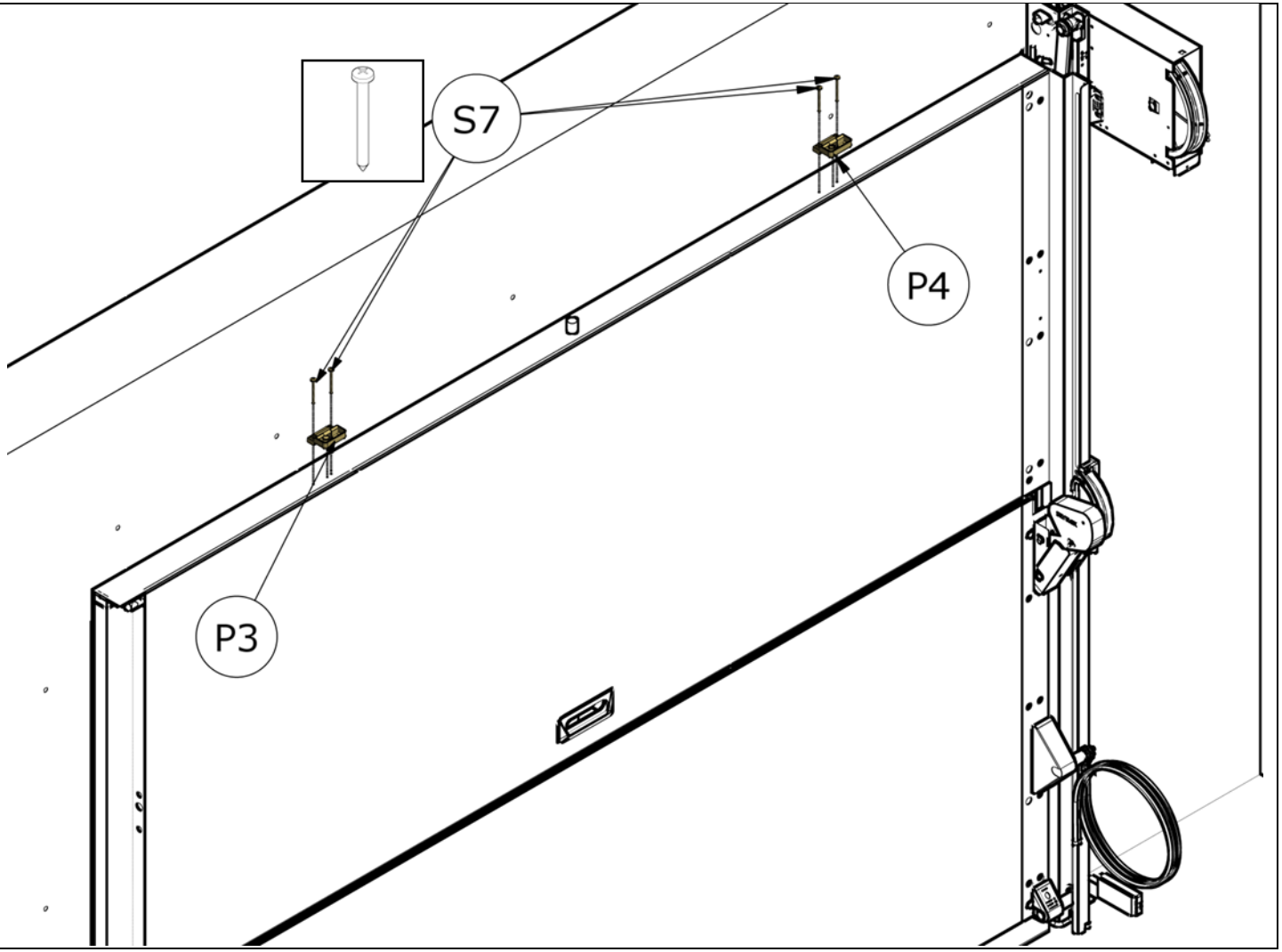


3.6 STRIKERS ON UPPER PANEL

- Place the strikers, P3 and P4, in the positions indicated by the pre drilled holes located on top of the upper panel.
- Fasten the strikers with S7 screws

NOTE: P3 on the left side has a magnet.

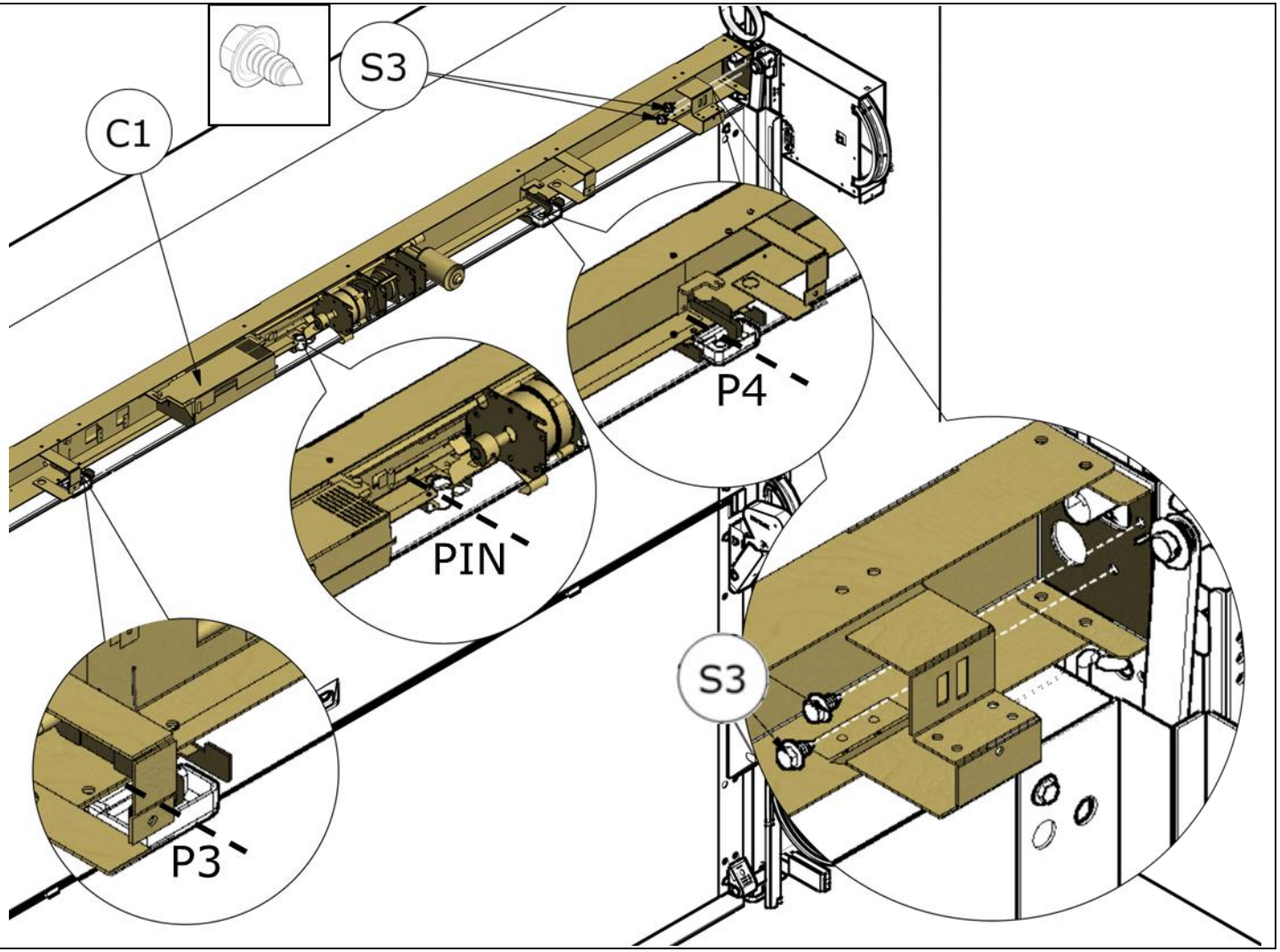
NOTE: Screws S7 are 58 mm long. Do not confuse with screws S4, which are 30 mm long.



3.7 OPERATOR/HEADBAR

- Place the operator/headbar C1 on top of the upper panel. Attach C1 to one of the uprights with two screws S3.

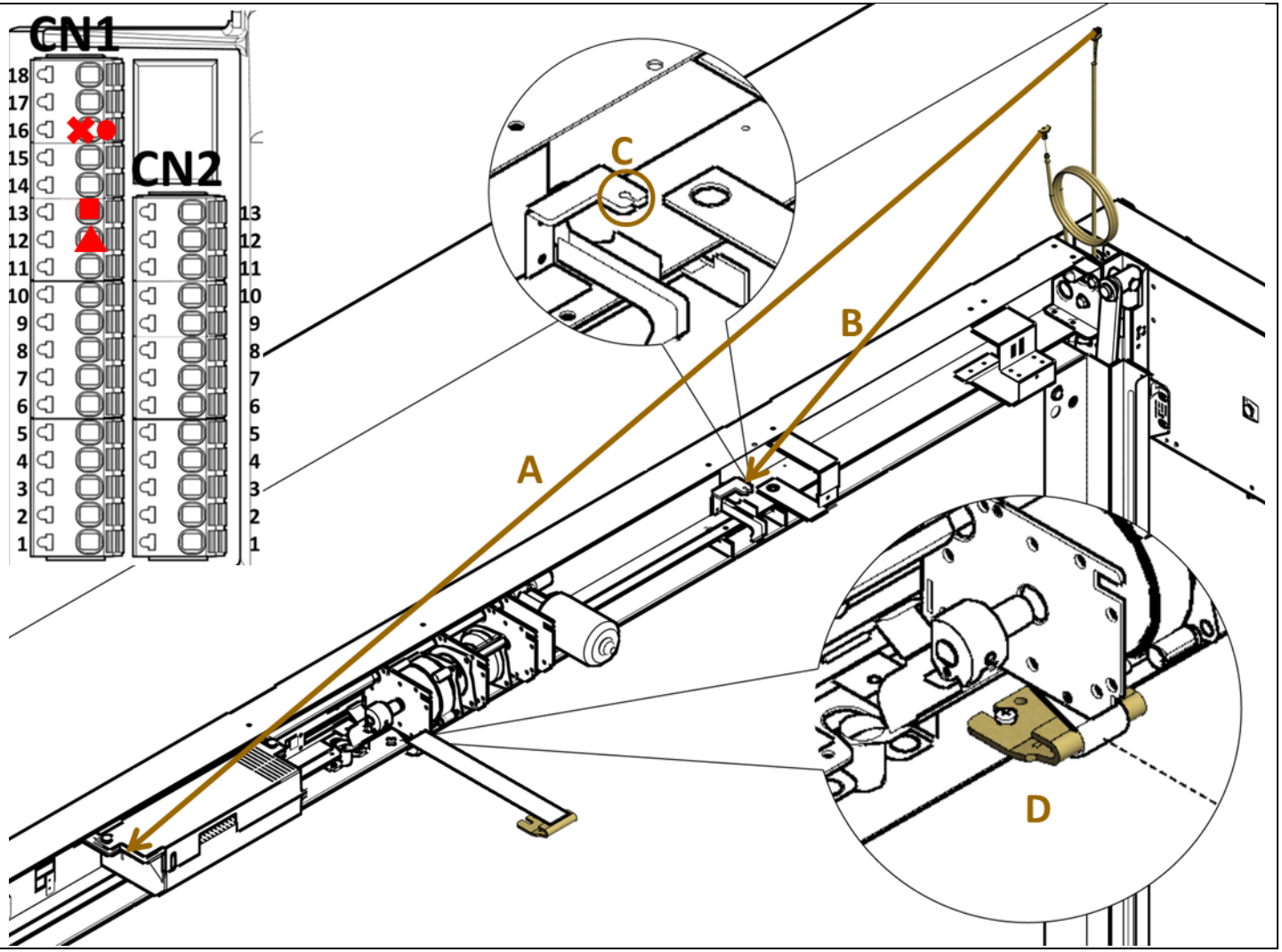
  NOTE: Be sure the headbar latches are aligned with the panel strikers, P3 and P4, and the pin placed in the middle of the upper panel P2 is centered.



3.8 PHOTOEYE, OPERATOR RELEASE AND STRAP CONNECTION

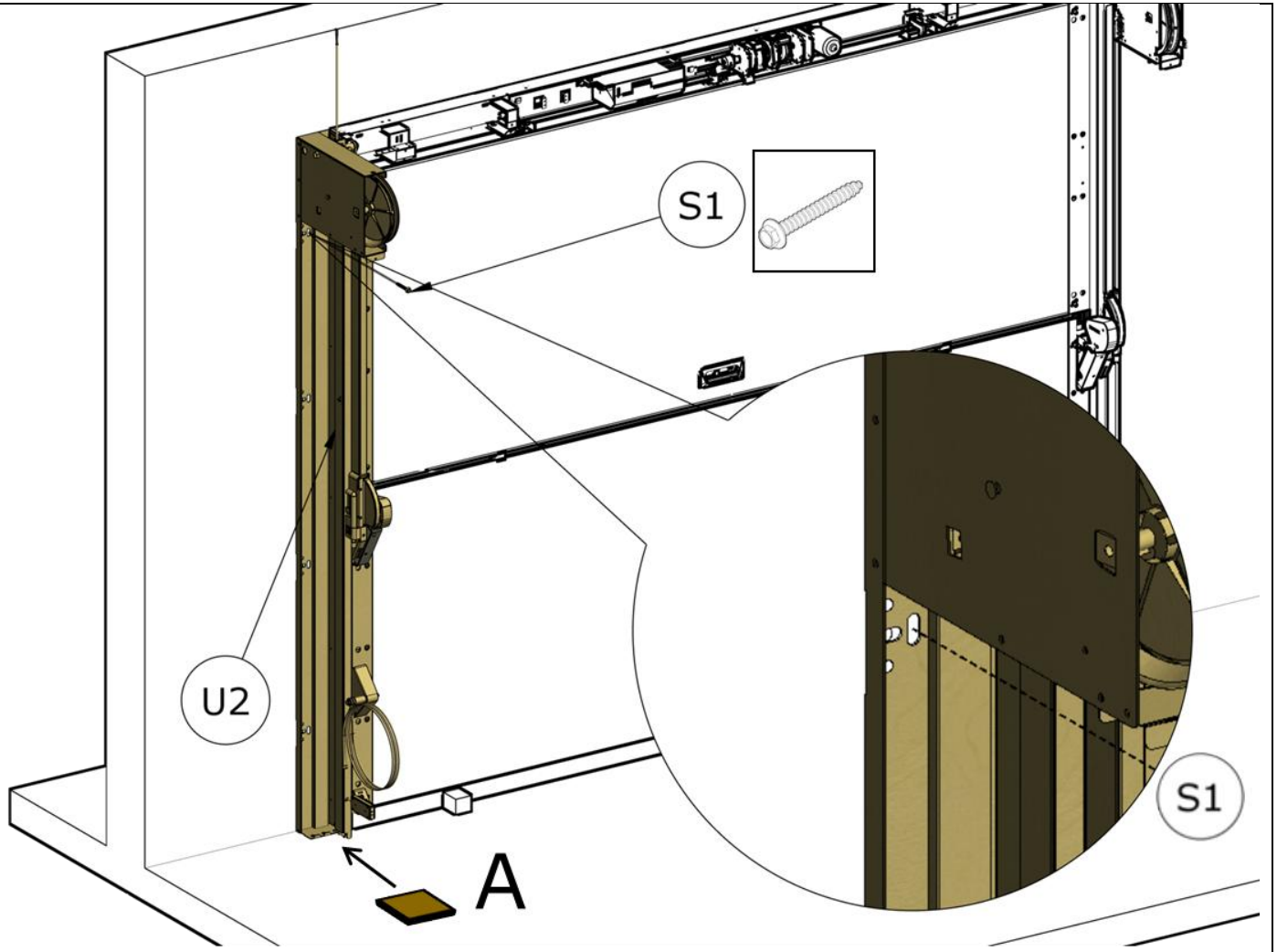
- Plug in the photo-eye cable (A): purple wire in slot 16 (dot), grey wire in slot 13 (square), pink wire in slot 16 (cross), and blue wire in slot 12 (triangle) of the CN1 terminal block.
- Attach the release handle cable (B) to the latch (C)
- Pull the strap in the middle of the operator/headbar and attach it to the upper panel by pushing it through the screws present on the upper side of the panel (D). Additional screw tightening may be necessary.

NOTE: See Section 6.2 for connection details.



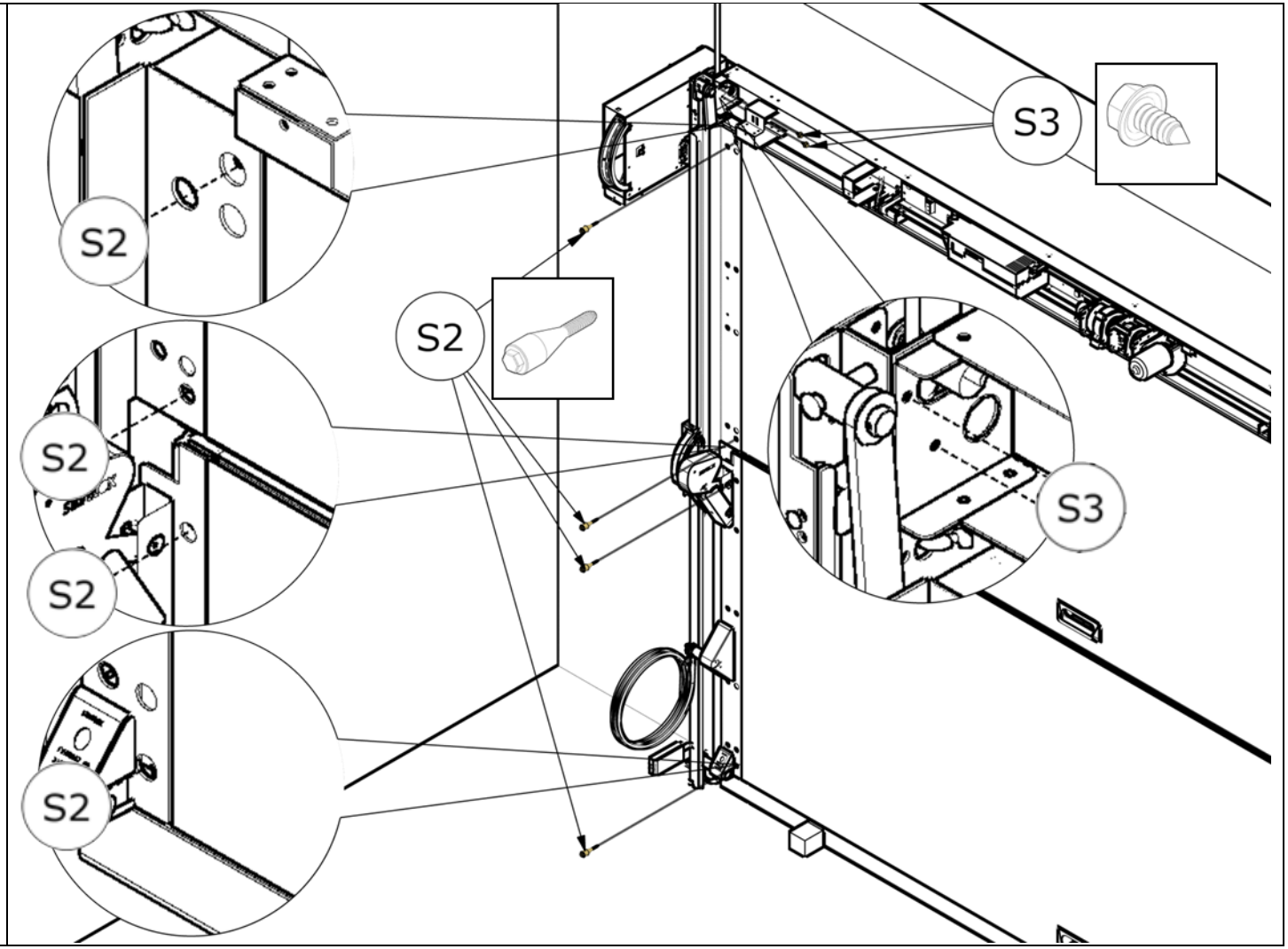
3.9 LEFT UPRIGHT

- Put the remaining upright U2 in place.
- **In the case of an uneven floor, add spacers below the upright base (A), to level this upright with respect to the other upright.**
- Attach the upright using the **vertical** shaped hole with screw S1.
- **In case of a concrete or brick wall installation, use a Fisher anchor, S10.**



3.10 PANEL AND OPERATOR/HEADBAR ATTACHMENT

- Secure the upper and lower panels to the second upright by fastening two S2 screws in the upper panel P2 and in the lower panel P1, in the same manner as step 3.5
- Secure the headbar to the upright with two S3 fasteners in the same manner as step 3.7

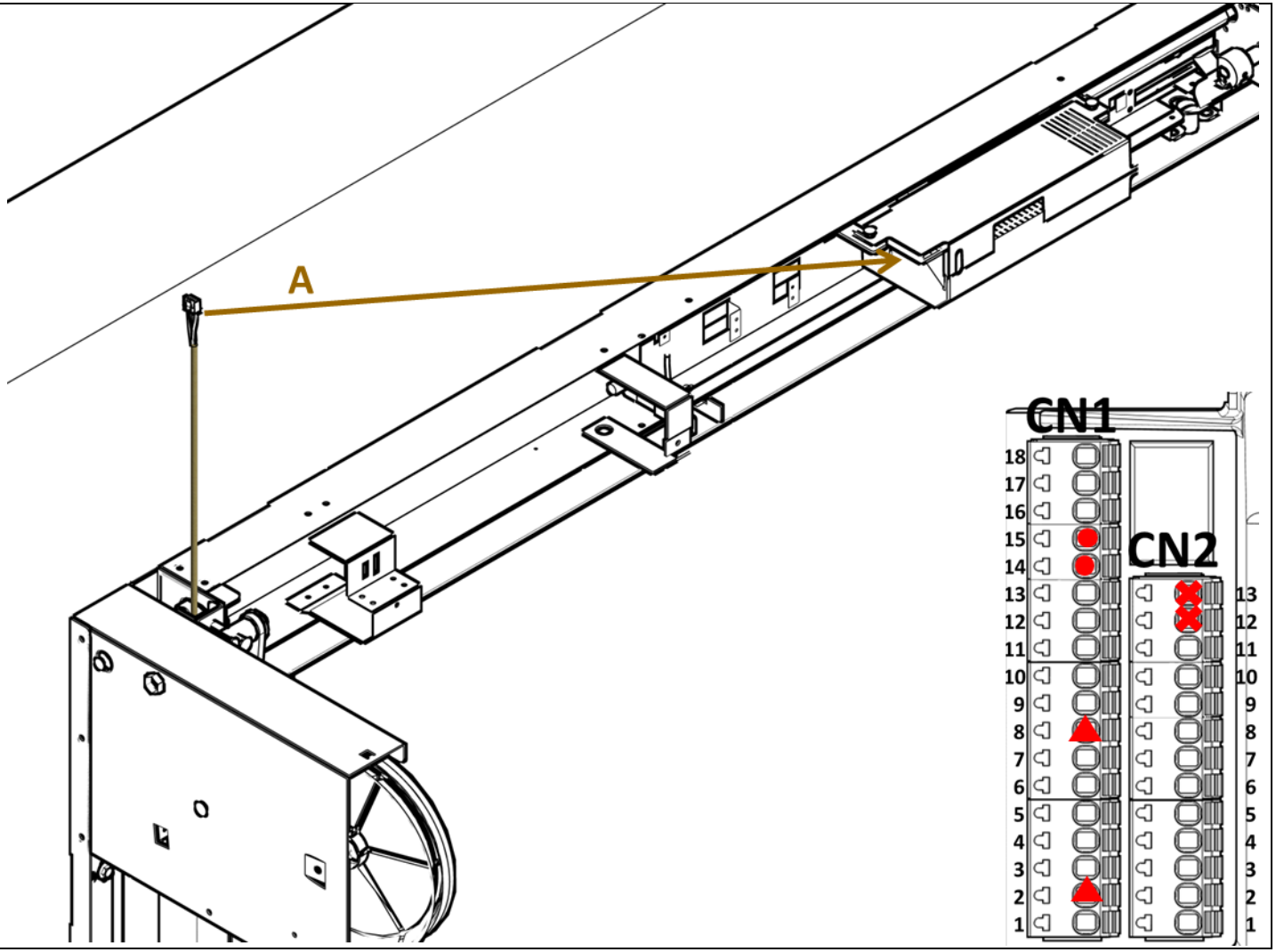


3.11 PHOTOEYE AND LIMIT SWITCH CONNECTION

- Connect the photo-eye cable (A): plug the two wires in slot 15 and 14 of the CN1 terminal block (dots).

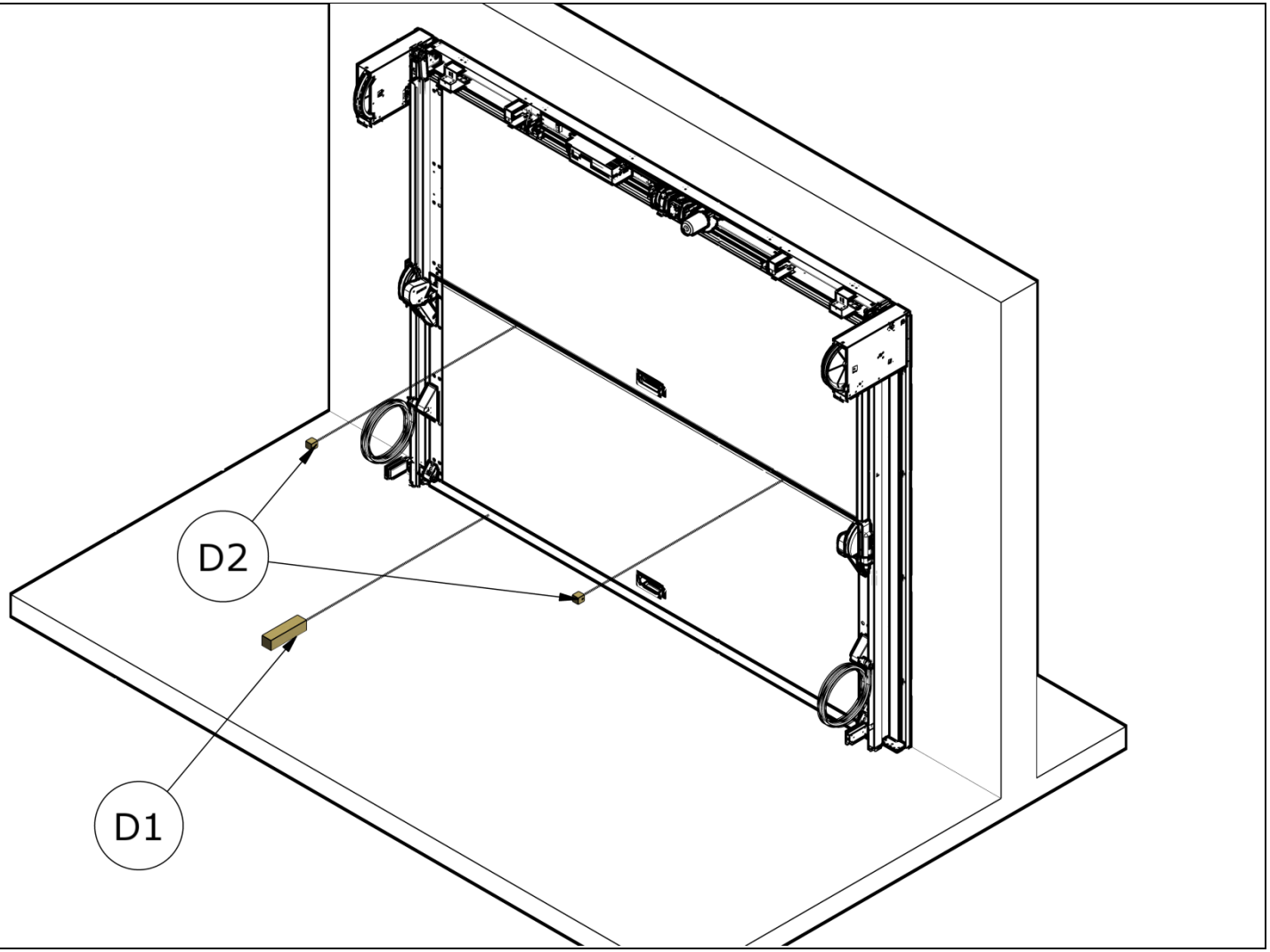
  NOTE for US & Canada: If provided, connect and install an external receiver. Plug the power wires in slot 13 and 12 of the CN2 terminal block (crosses). Plug the Channel1 wires in slot 8 and 2 of the CN1 terminal block (triangles). See Sections 6.9 and 6.11 for additional information.

  NOTE: See Section 6.2 for additional details about the terminal block.



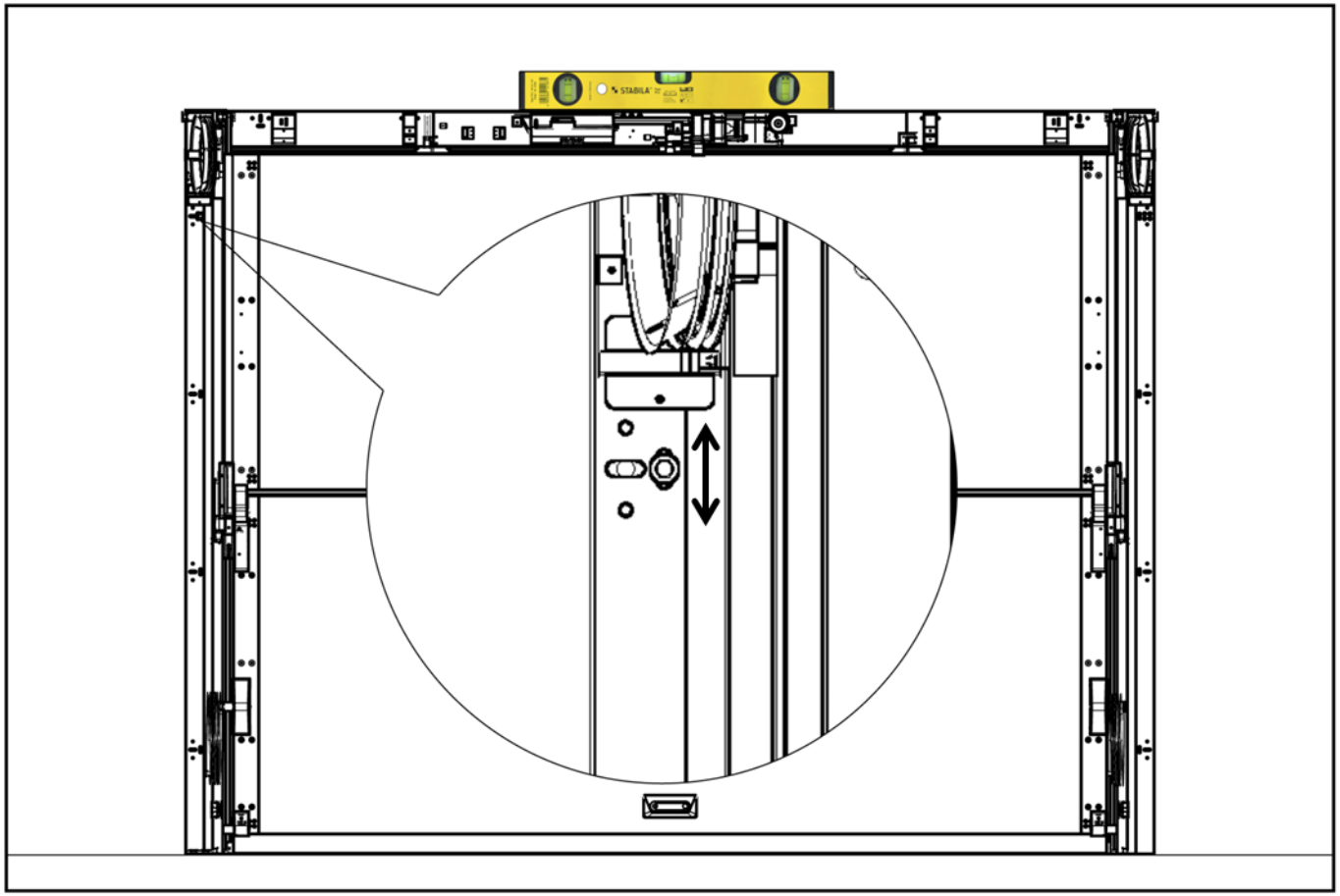
3.12 SPACER REMOVAL

- Remove the spacers between the panels and any spacers on the floor.



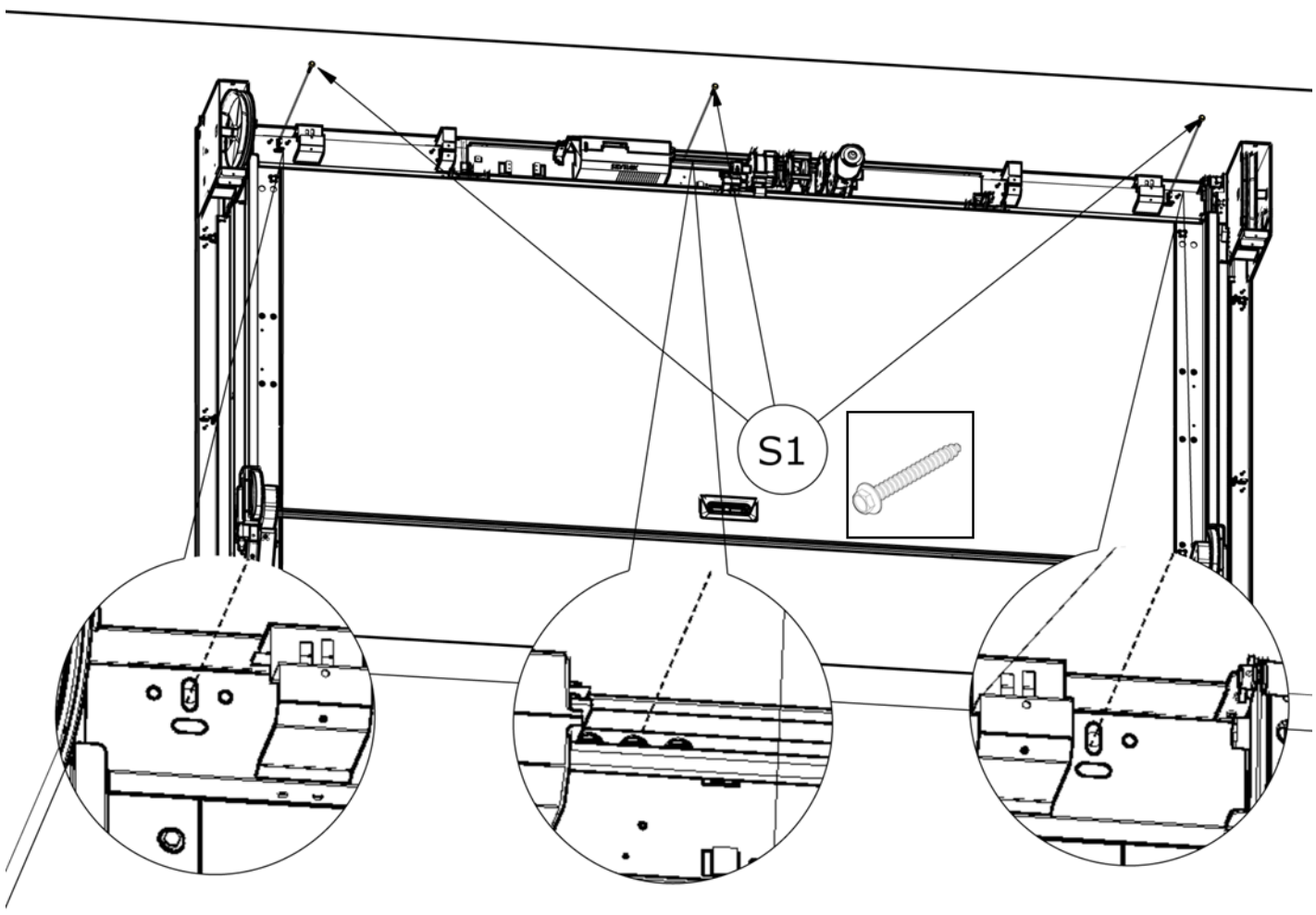
3.13 LEVEL THE OPERATOR/HEADBAR

- Check operator/headbar level.
- To level, adjust the second installed upright fixed through the vertical shaped hole.



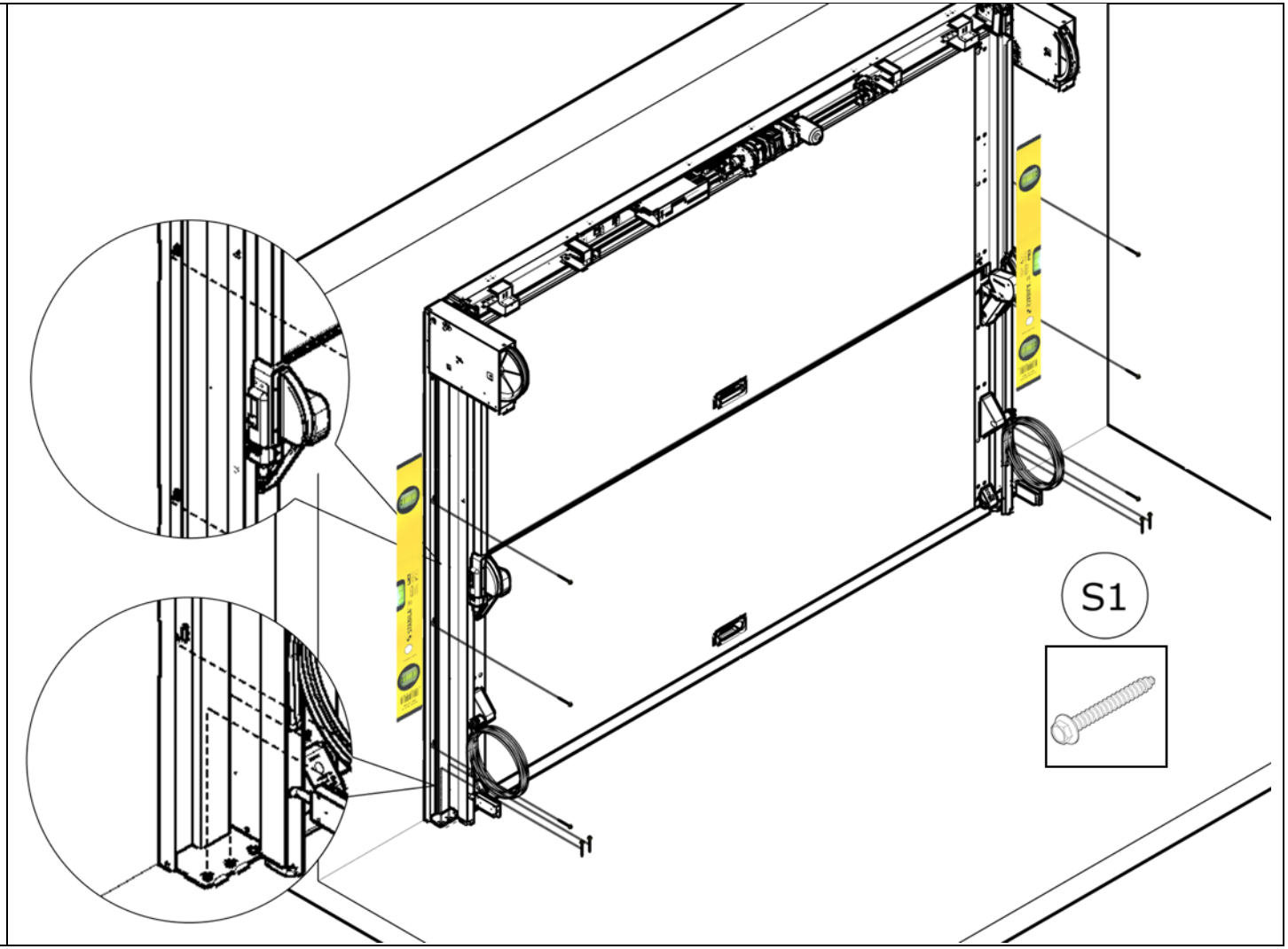
3.14 SECURING THE OPERATOR/HEADBAR

- Once level, attach the operator/headbar to the wall with three S1 screws.
- **In case of a concrete or brick wall installation, use a Fisher anchor, S10.**



3.15 UPRIGHT LEVEL AND ATTACHMENT

- Check the level of the upright and secure to the wall with five S1 screws each.
- Repeat for other upright.
- **In case of a concrete or brick wall installation, use a Fisher anchor, S10**



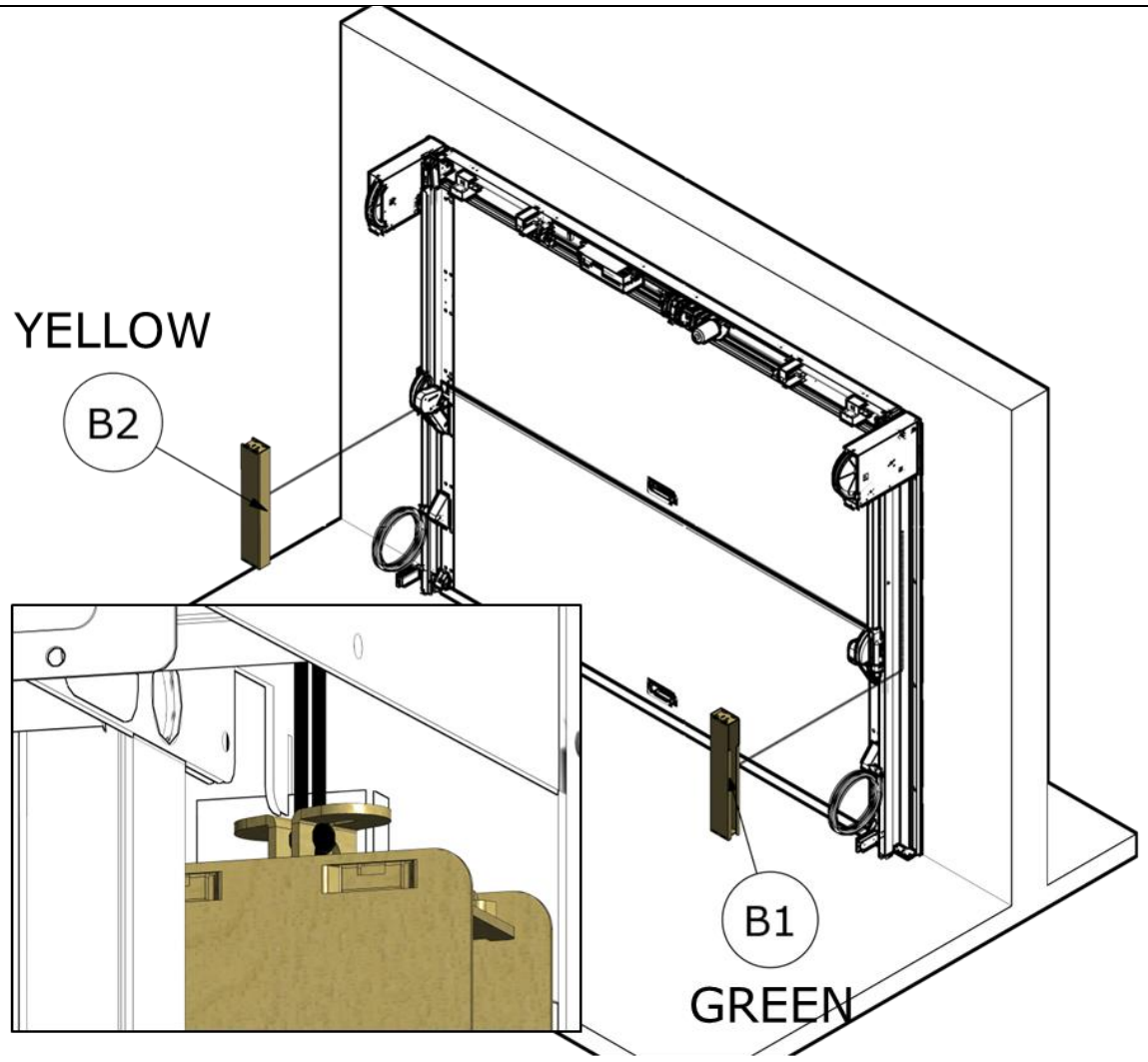
3.16 NARROW COUNTERBALANCE BOXES

- Place the narrow counterbalance boxes (without the weights in them): B1(green) on the right and B2 (yellow) on the left .
- Hang the counterbalance boxes on to the two cables ending with a sphere (solid black in the zoomed detail).

  NOTE: There are no screws to fasten. The cable spheres simply go in their housing placed in the upper part of the counterweight boxes.

  NOTE: Make sure to follow the color code.

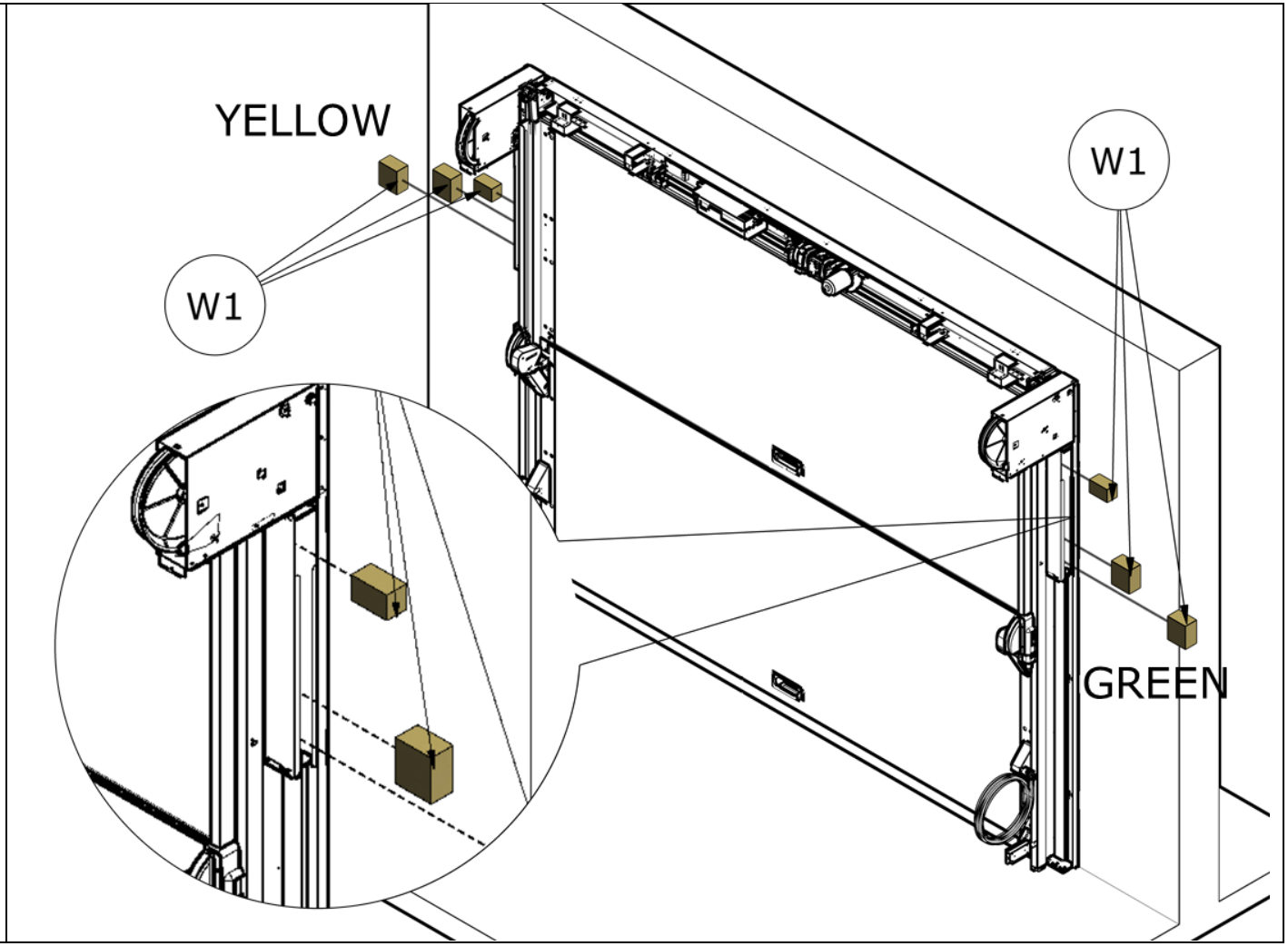
- The open side of the box will face the side of the garage, as shown in the picture (see also installation step 3.17).



3.17 WEIGHT LOADING – NARROW BOXES

- Load the narrow counterbalance boxes with the weight units W1.

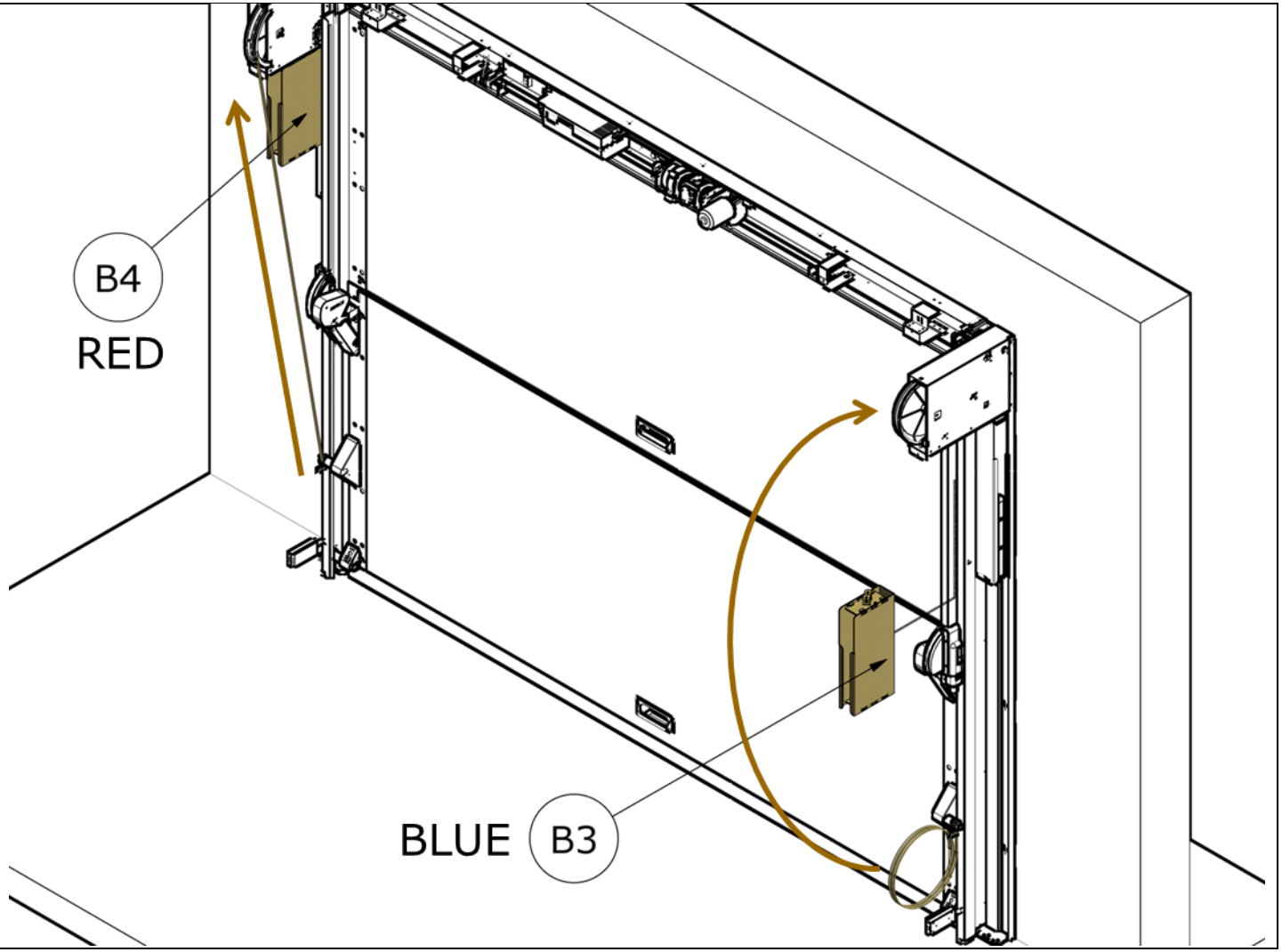
  NOTE: Make sure to follow the color code: green W1 for right counterbalance box, B1; yellow W1 for left counterbalance box, B2.



3.18 LARGE COUNTERBALANCE BOXES AND CABLES

- Place the two cables attached to the lower panel around the pulleys (as indicated by the arrows: in the right side, the cable is shown still wrapped; in the left side, the cable is shown in the installed configuration).
- Hang the large counterbalance boxes, B3 (blue) and B4 (red), without the weights, to the sphere extremities of the cables, in the same way done for boxes B1 and B2.

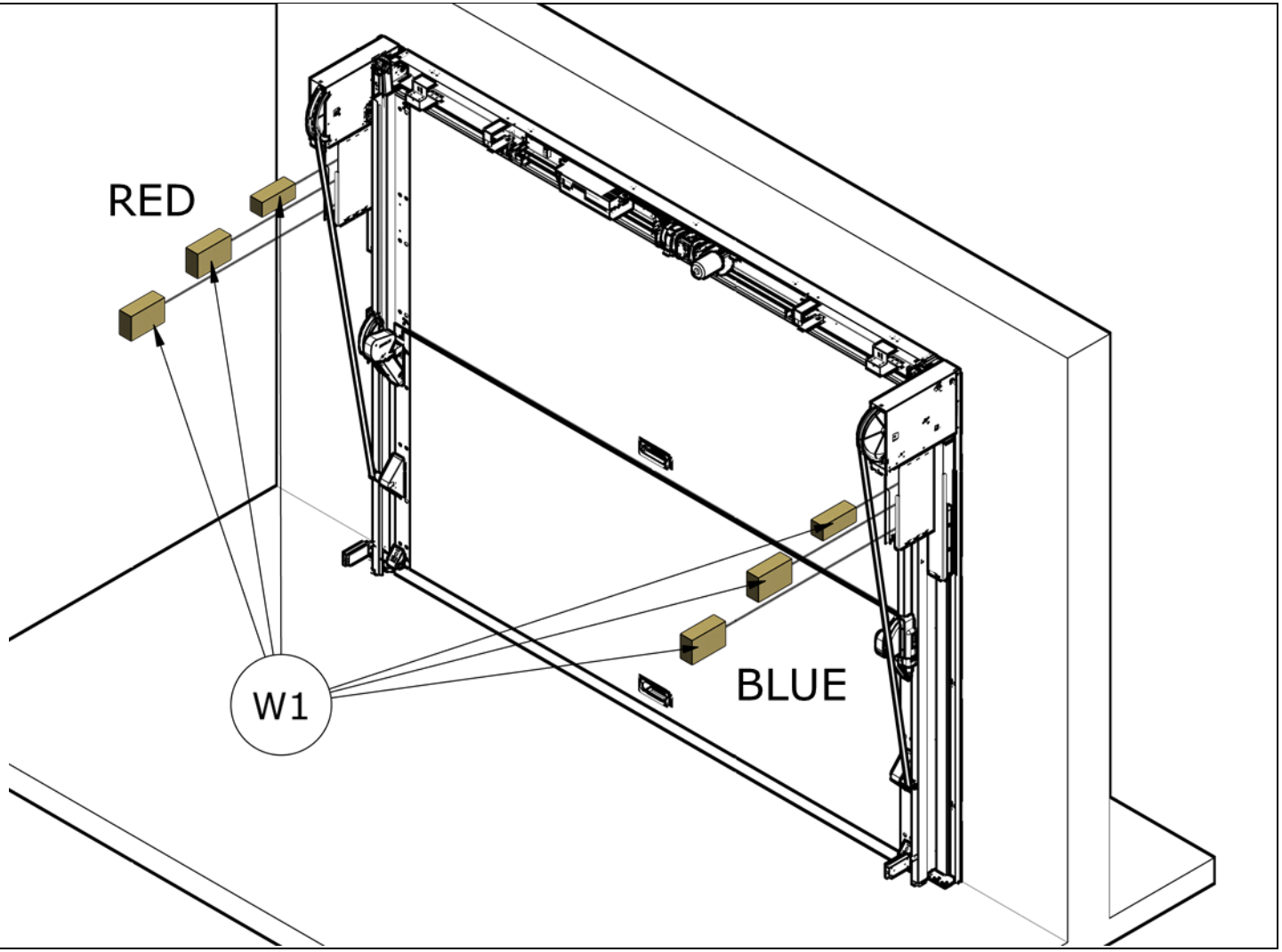
  NOTE: Make sure to follow the color code.



3.19 WEIGHT LOADING – LARGE BOXES

- Load the counterbalance boxes with the weight units W1.

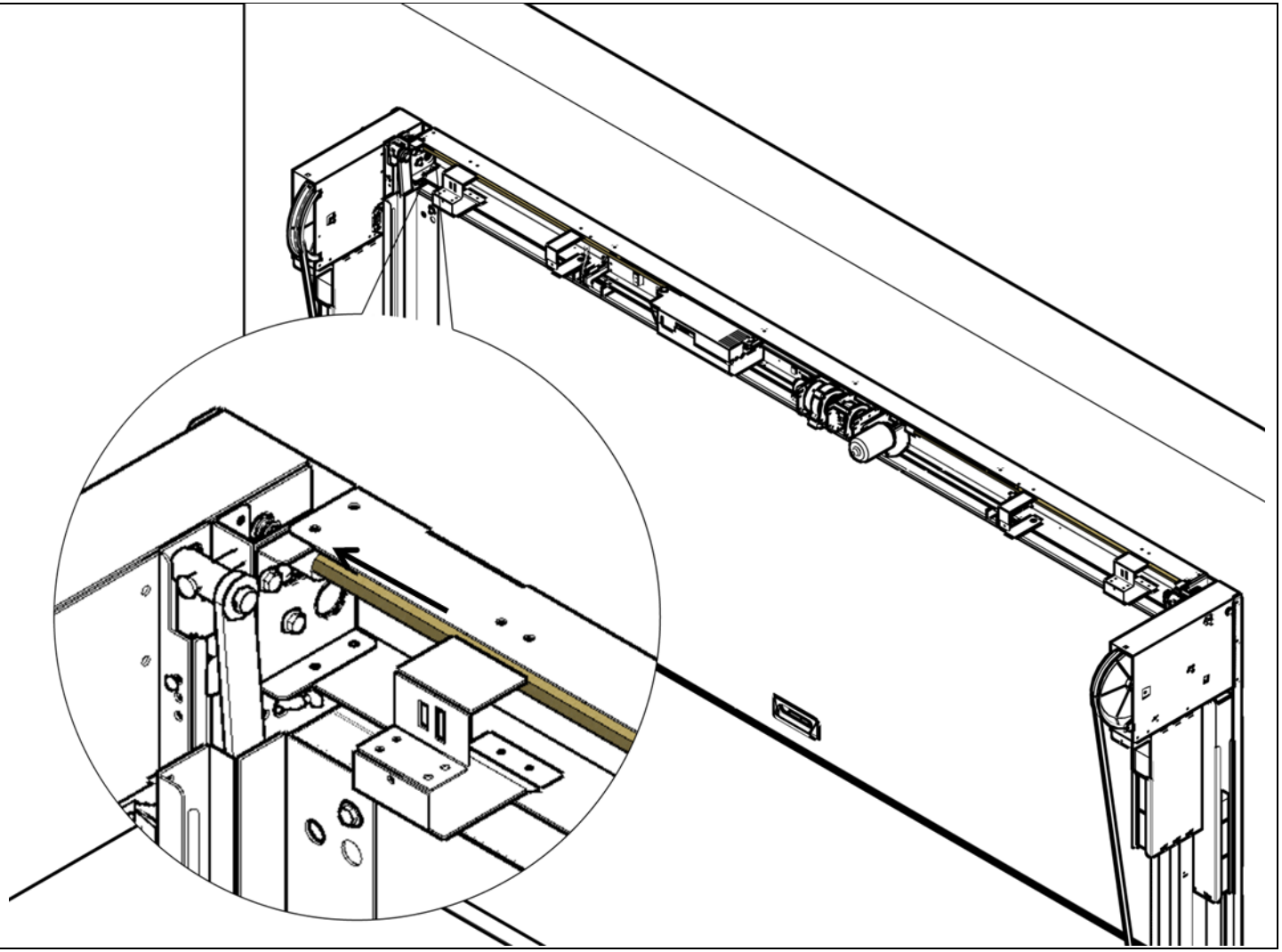
  NOTE: Make sure to follow the color code: blue W1 for right counterbalance box, B3; red W1 for left counterbalance box, B4.
  .



3.20 OPERATOR DRIVE SHAFTS

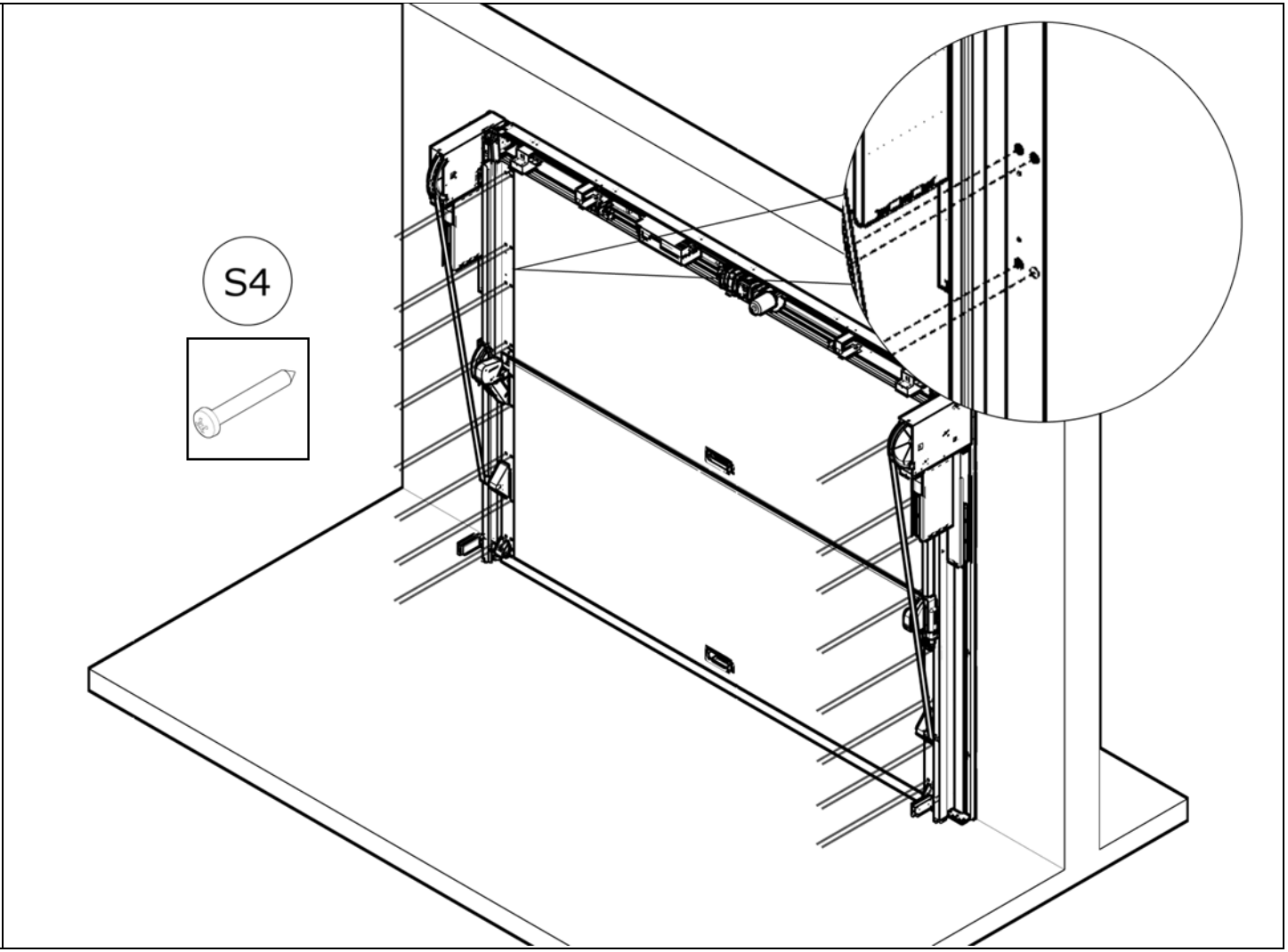
- The drive shafts are already present in the headbar assembly.
- Plug them in the appropriate upright joint (**both sides**).

  NOTE: In the zoomed detail, the left side is depicted. The arrow shows where to insert the drive shaft. The upright joint has to be pushed back to allow the insertion of the drive shaft; the spring of the joint will restore its position after the engagement.



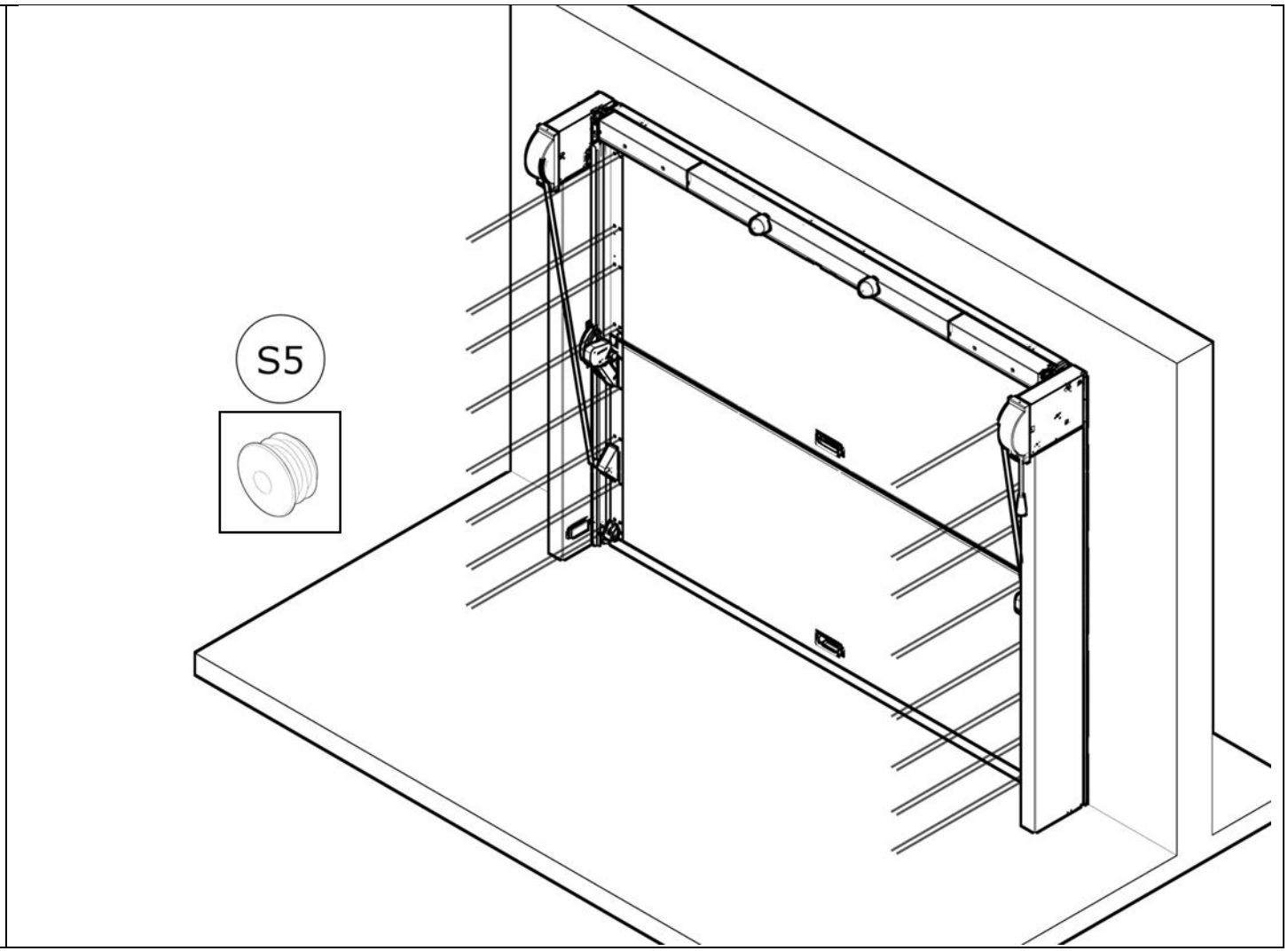
3.21 PANEL ADDITIONAL SECURING

- Using screws S4, attach the panels to the frame.
- There are 16 screws for each side.
- Remember to fasten both sides.



3.22 STILE CAPS

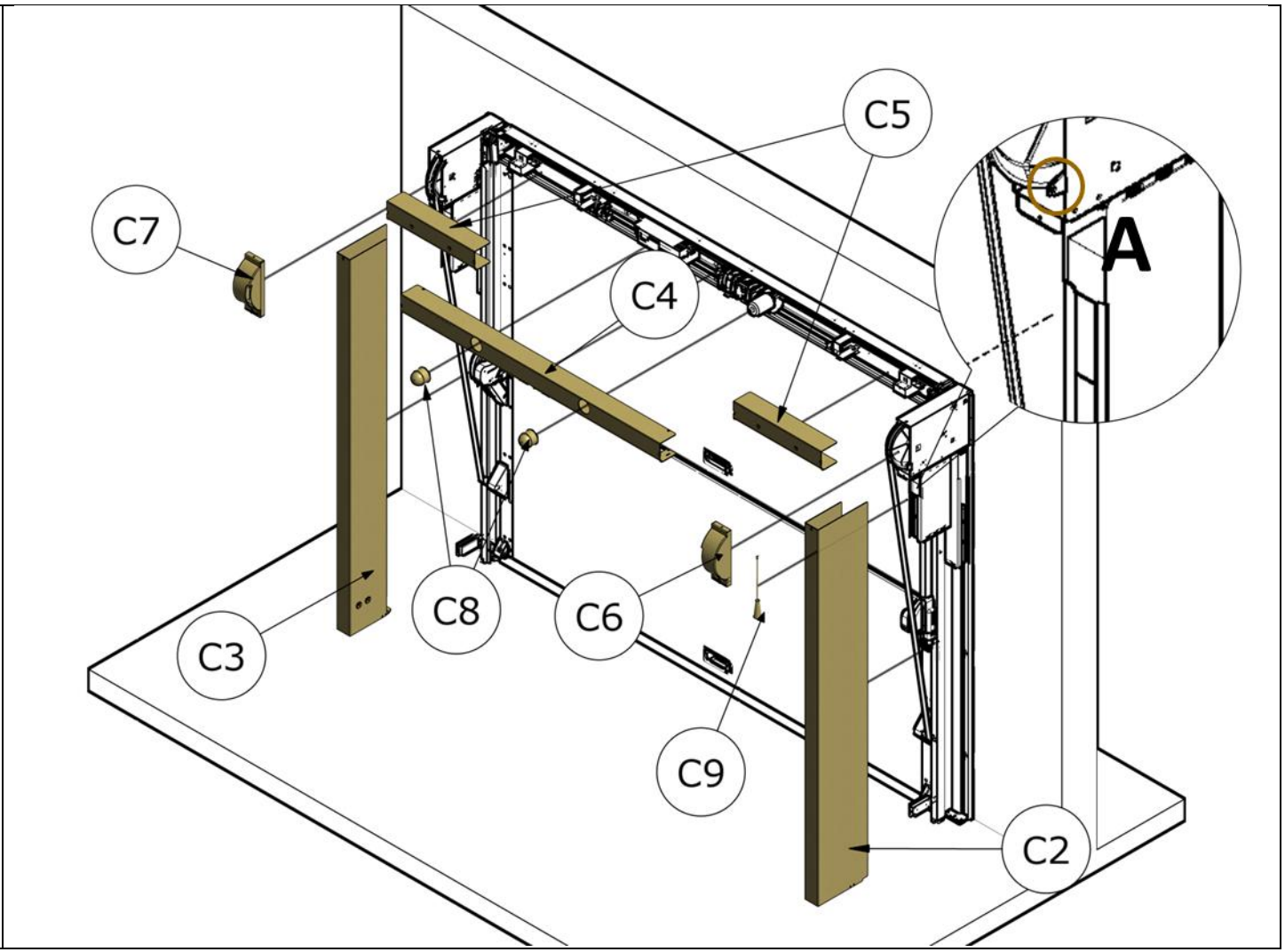
- Cover the screws placed in step 3.21 with 16 stile caps, S5, on each side.



3.23 COVERS AND RELEASE HANDLE

- Put the covers in place following this order:

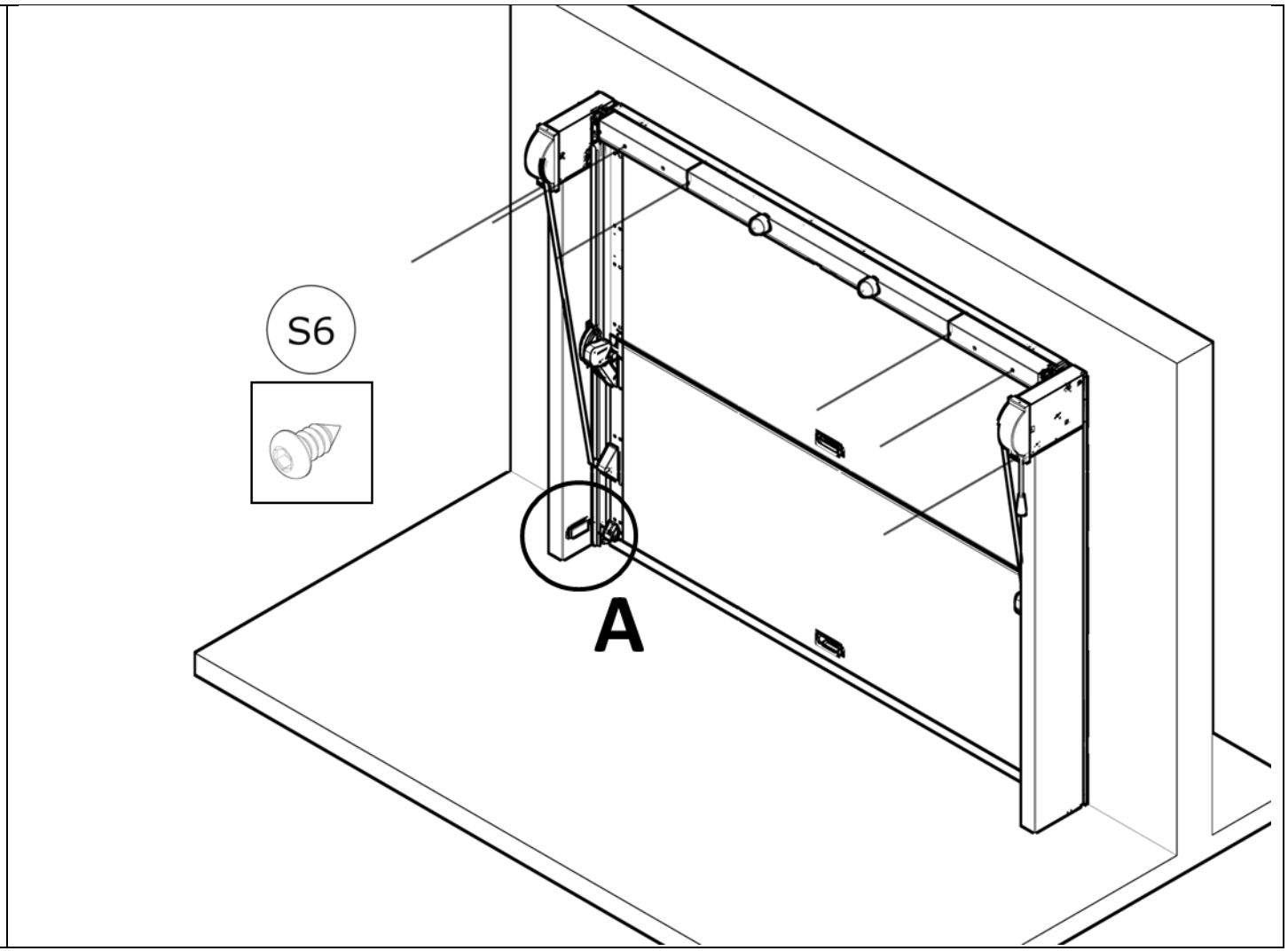
C3	LEFT COUNTERBALANCE COVER
C7	LEFT PULLY COVER
C2	RIGHT COUNTERBALANCE COVER
C9	OPERATOR RELEASE HANDLE – Attach to the tab coming out from the pulley box (A).
C6	RIGHT PULLY COVER
C5	HEADBAR SIDE COVER
C4	OPERATOR/HEADBAR CENTRAL COVER
C8	CENTRAL COVER CAP



3.24 COVER SECURING AND PHOTO-EYE HANGING

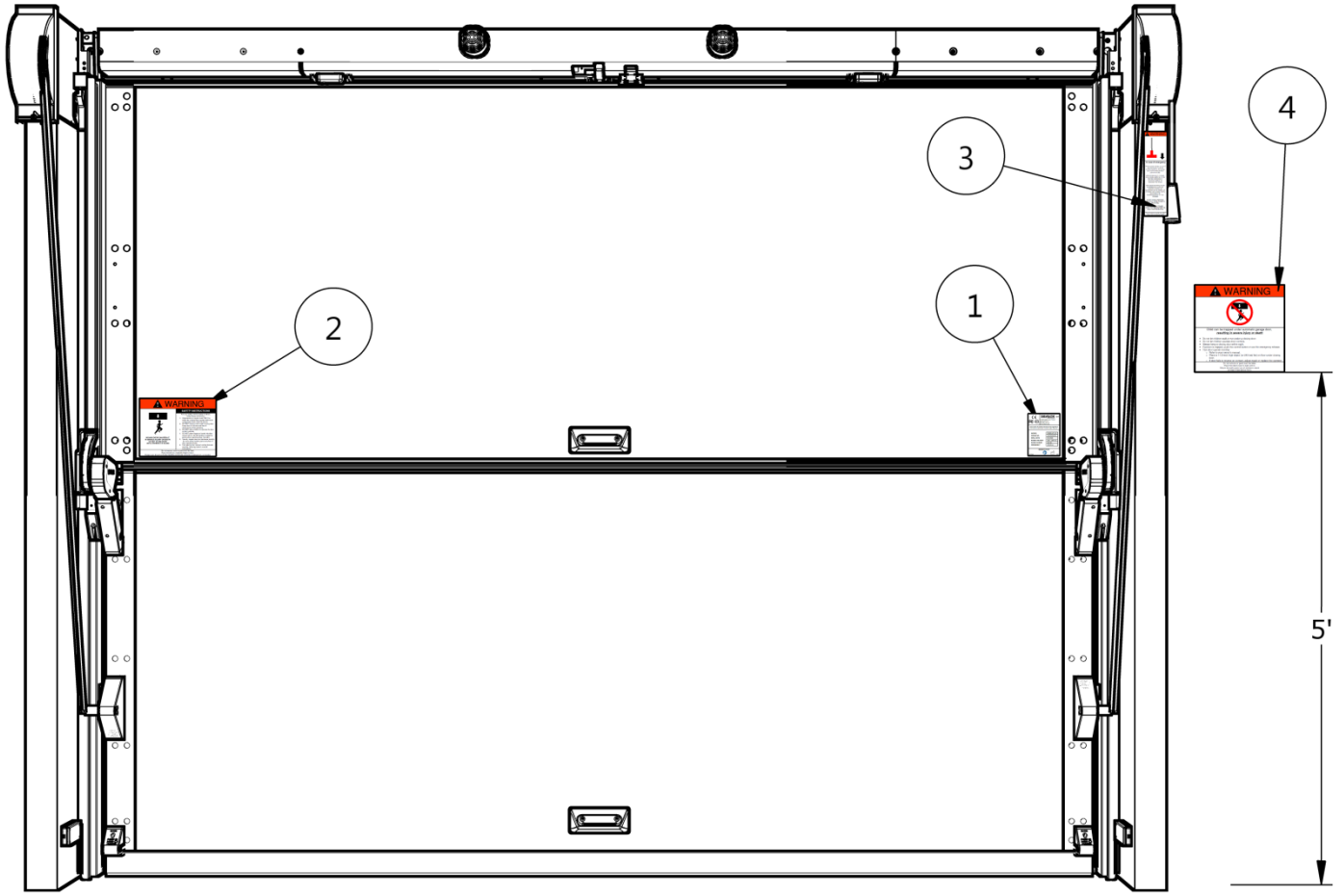
- Using six screws S6, fix the operator/headbar covers to the frame.
- Hang the photo-eyes on the counterbalance boxes; details (A) shows the left side. Do the same for right side too.

NOTE: Photo-eyes are included in the upright assemblies, U1 and U2. Hang them on to the circular slots of counterbalance boxes, C2 and C3.



3.25 LABEL POSITIONING

- Check that ID label is in place on right bottom corner of upper panel (1).
- Attach general warning label on left bottom corner of upper panel (2).
- Attach emergency release handle label on right counterbalance box, behind the release handle (3).
- Attach the wall station control button label close to wall control, at least 5 feet above floor (4).



3.26 DOOR TEST

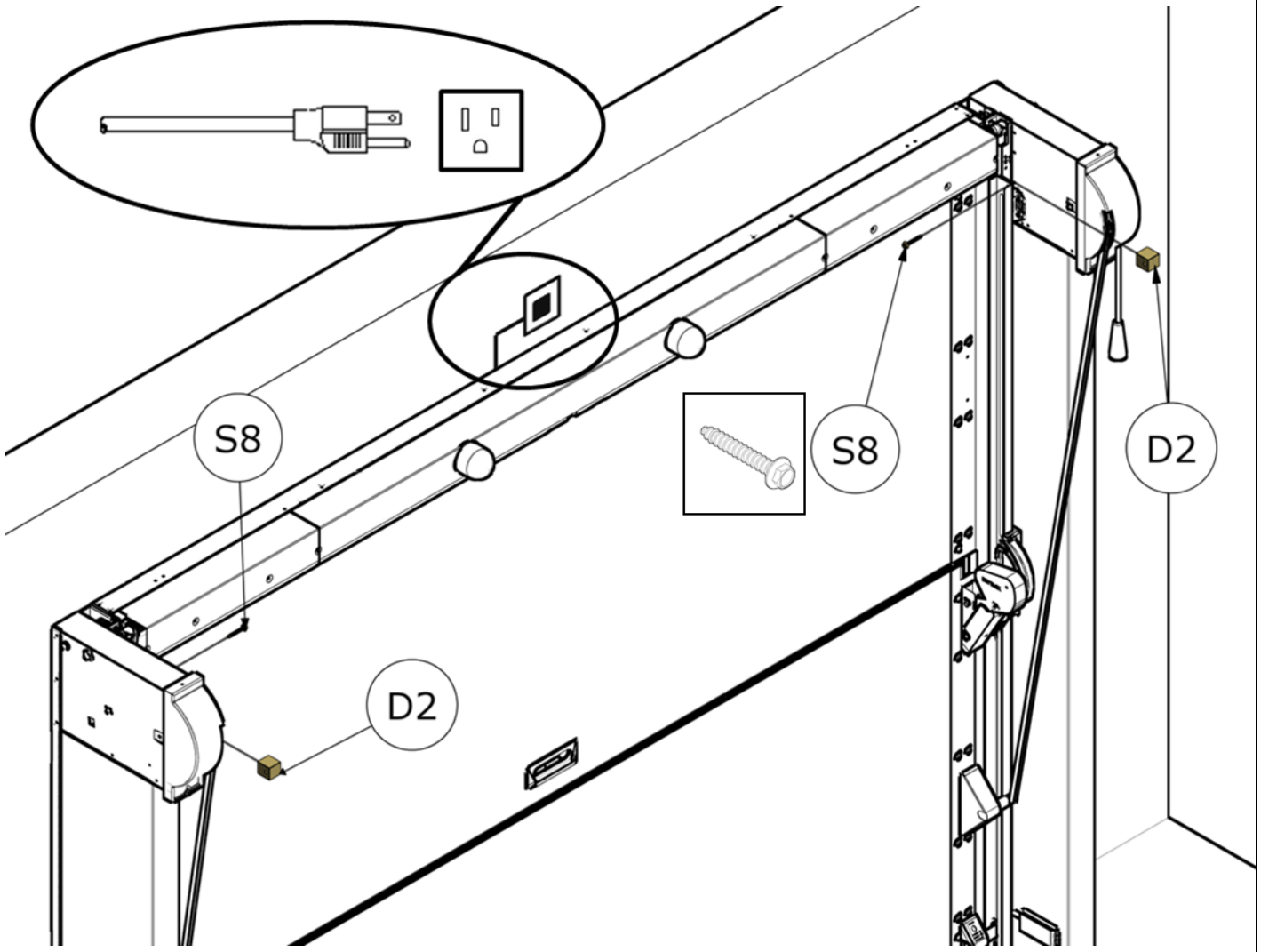
- Remove the two blocks, D2, by releasing screws S8.
- Plug the power cable in a properly grounded outlet.

  To reduce the risk of electric shock, your garage door opener has a grounding type plug with a third grounding pin. This plug will only fit into a grounding type outlet. If the plug doesn't fit into the outlet you have, contact a qualified electrician to install the proper outlet.

- Test door manually (see owner's manual, Section 3.1).
- Test door with the transmitter (see owner's manual, Section 3.2).

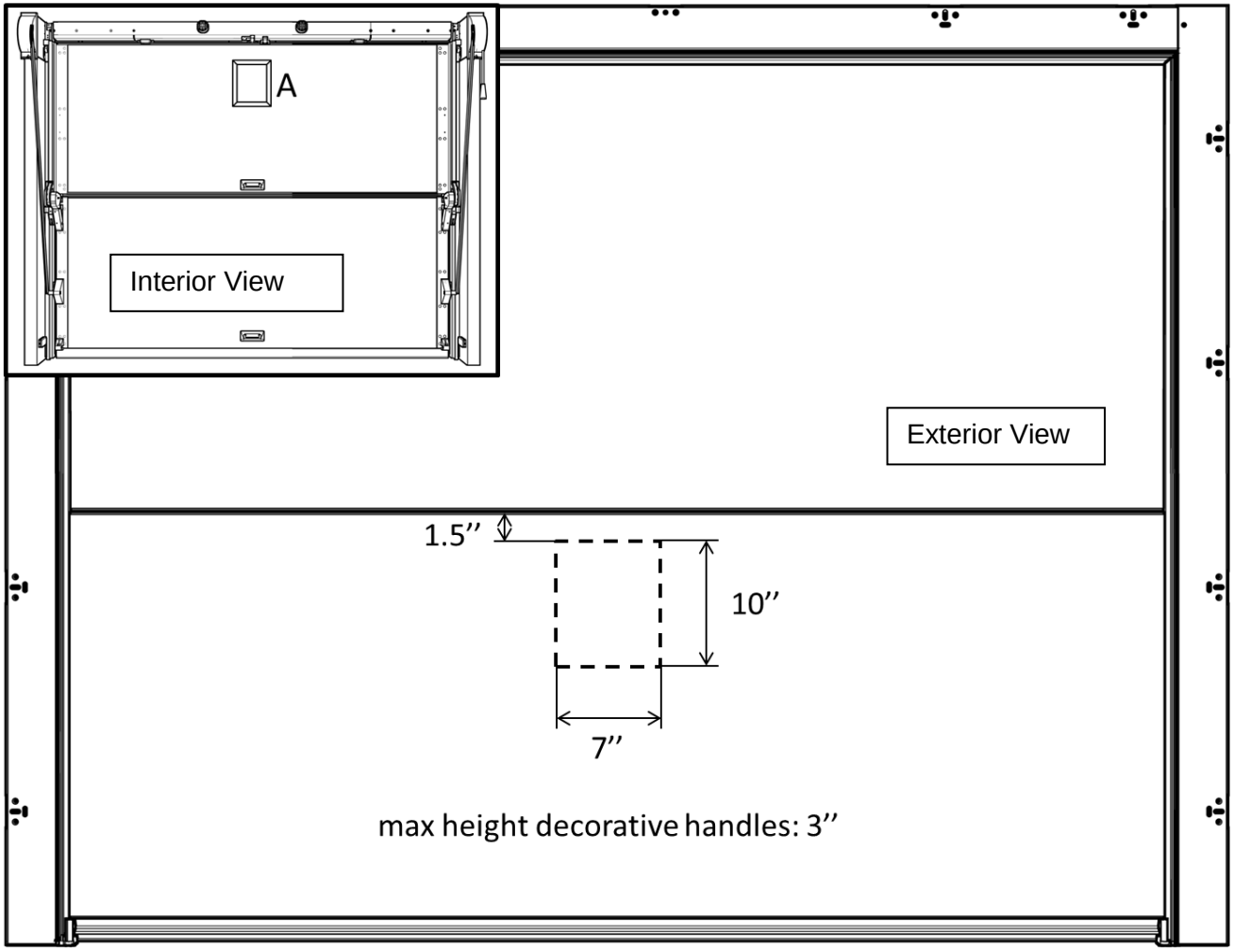
WARNING

To prevent possible SERIOUS INJURY or DEATH from electrocution or fire:
• Disconnect ALL electric and battery power BEFORE performing ANY service or maintenance.
• Garage door installation and wiring MUST be in compliance with ALL local electrical and building codes.
• NEVER use an extension cord, 2-wire adapter, or change plug in ANY way to make it fit the outlet. Be sure the opener is grounded.



3.27 DECORATIVE HARDWARE (for US & CANADA)

- **If** on the back side of the upper panel, a cavity is present (A), decorative hardware may be installed on the front side of the door.
- Decorative handles can be attached on the outside of the lower panel inside the dashed area shown in the picture.
- Decorative hinges can be attached on the panel sides, BUT the height of the decorative hardware must be less than 7 mm (1.5”).



4 REQUIREMENTS FOR THE CORRECT DOOR OPERATION

During the door testing after installation, all the following operation requirements must be verified. In the case that a requirement is not fulfilled, follow the related instruction until the issue is solved.

4.1 Strikers

The strikers, P3 and P4, placed on the top of the upper section in installation step 3.6, ensure the correct door closure, without any backlash (door re-opens).

IF DOOR DOES NOT CLOSE, follow the instructions below:

1. Locate the strikers placed on the top side of the upper section with door slightly open;
2. Release the striker screws and adjust the position of the striker along the direction shown in Figure 4-1 until the door closes without any backlash (door re-opens). Do the same for all the strikers present on the section.
3. In closed position, the strikers must engage with the closing hooks (Figure 4-2); remove headbar covers to better see the engagement.

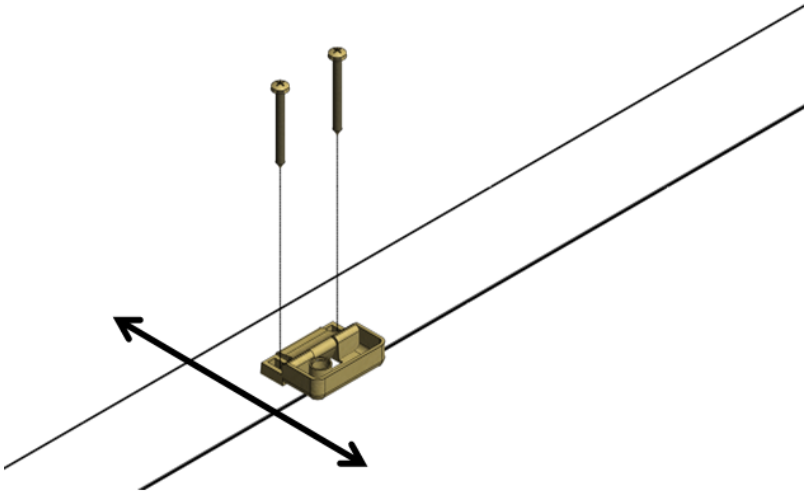


Figure 4-1

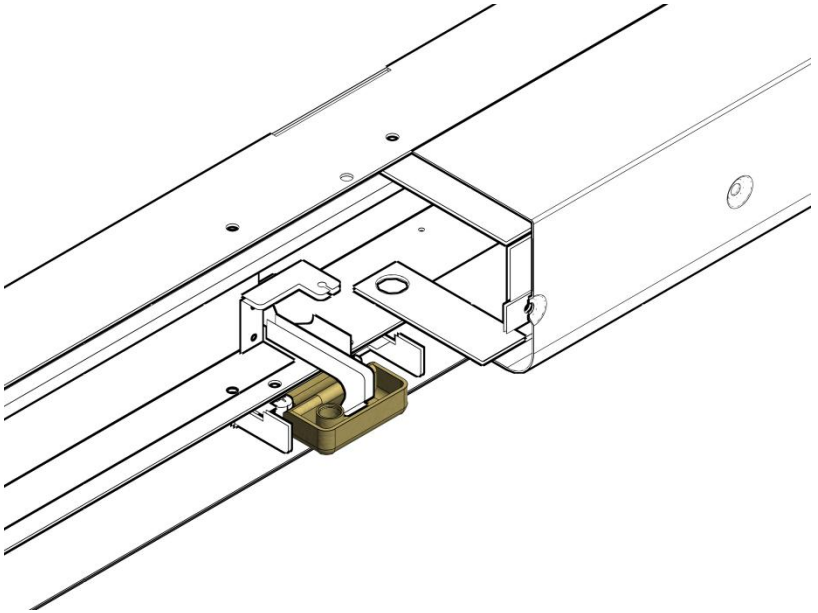


Figure 4-2

4.2 Closing limit switch

Make sure the closing limit switch, composed by the pair of magnates mounted on striker, P3, and on left closing latch of headbar/operator, C1, is properly placed (see P3 detail of installation step 3.7 on page 22). In case of closing limit switch misplacement, the door does not start the automatic opening. The magnets must be aligned and the distance between them smaller than 6 mm.
IF NOT, follow the instructions below:

Adjust the magnets positions until a good alignment is reached and the distances between the magnets faces is less than 6 mm.

1. Close the door and remove left headbar cover C5.
2. Locate the closing limit switch placed on the latch near the electronic board.
3. Release the screw (A) and adjust the position of the closing limit switch magnet along the indicated direction (Figure 4-3) and align magnet along dashed line. Check magnet distance too.

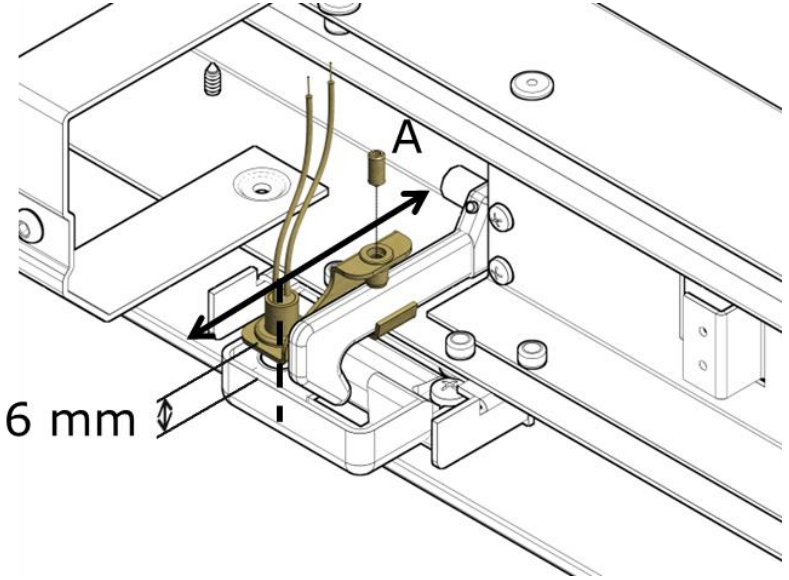


Figure 4-3

4.3 Counterweights

The counterweights are properly balanced from the factory. This results in a smooth door operation, nor too slow nor too fast.

IF NOT, follow the instructions below:

To balance the counterweights, remove the counterbalance covers, C2 and C3, and follow the instructions below:

1. If the upper section in open position tends to drop: with door closed, add weight units symmetrically to left and right narrow counterbalance boxes (Figure 4-4)
2. If the upper section opens too fast: with door closed, remove weight units symmetrically to left and right narrow counterbalance boxes (Figure 4-4)
3. If the lower section in open position tends to drop: with door closed, add weight units symmetrically to left and right large counterbalance boxes (Figure 4-5)
4. If the lower section opens too fast: with door closed, remove weight units symmetrically to left and right large counterbalance boxes (Figure 4-5)

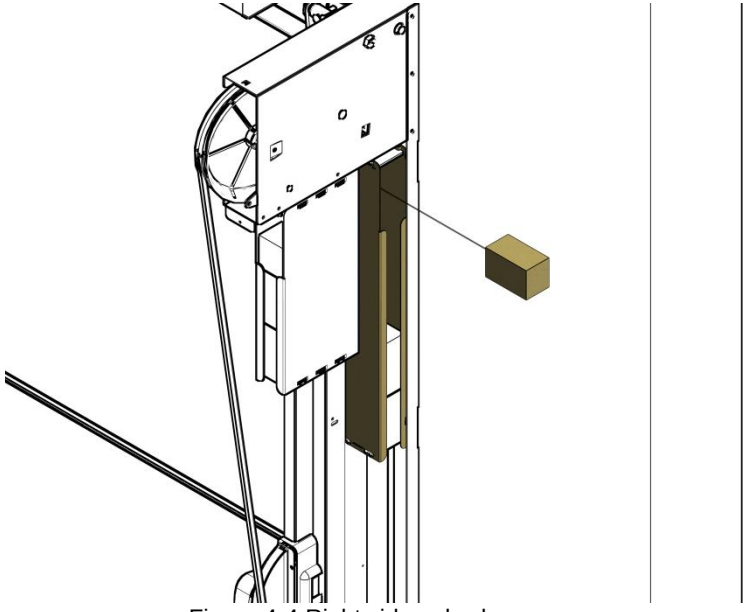


Figure 4-4 Right side only shown

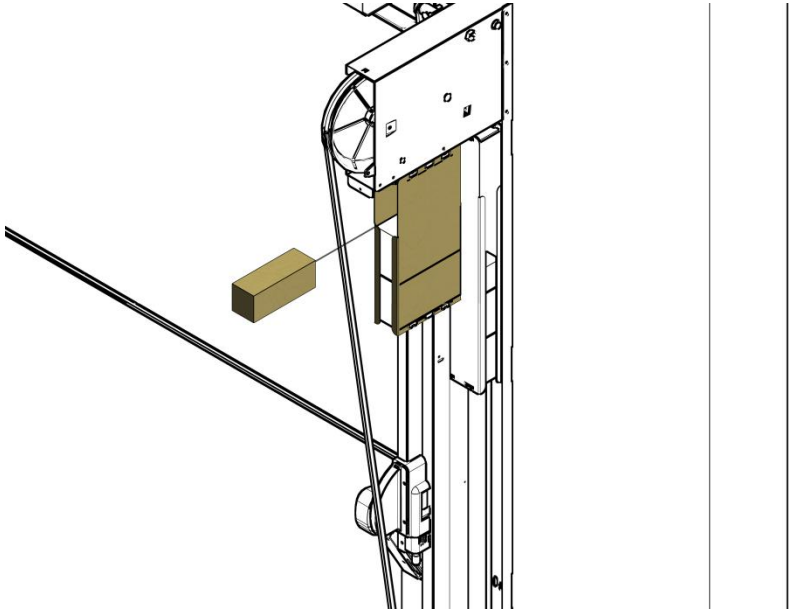


Figure 4-5 Right side only shown

4.4 Lifting arm

The lifting-arm upper joint is properly located from the factory. When the door is in open position, the upper section is slightly tilted as showed in Figure 4-6..

IF NOT, follow the instructions below:

In open position, the upper section must be slightly tilted as showed in Figure 4-6. To adjust the upper section incline, the position of the pin highlighted in Figure 4-7 with a dashed line must be adjusted. Adjust the pin on both sides with door closed.

1. Close the door and unplug opener;
2. Locate the lifting arm pin on the headbar corner;
3. Release the pin nut, A (Figure 4-7);
4. Tighten the adjustment screw, B, to create more incline (Figure 4-7);
5. Secure the pin nut, A;
6. Repeat steps 3 to 5 for the pin placed on the other side;
7. Open the door and check the inclination of the upper section; repeat these steps until a slightly tilted configuration is reached.

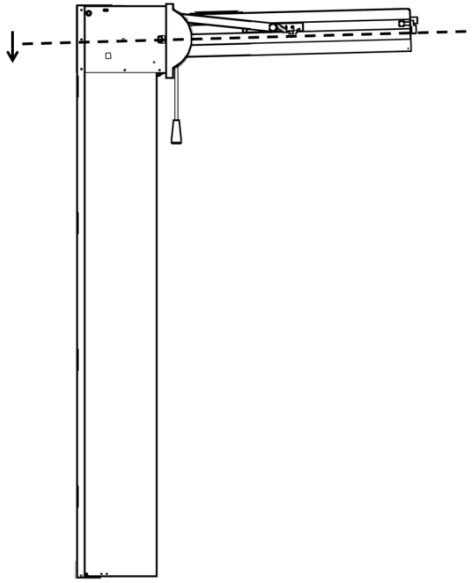


Figure 4-6

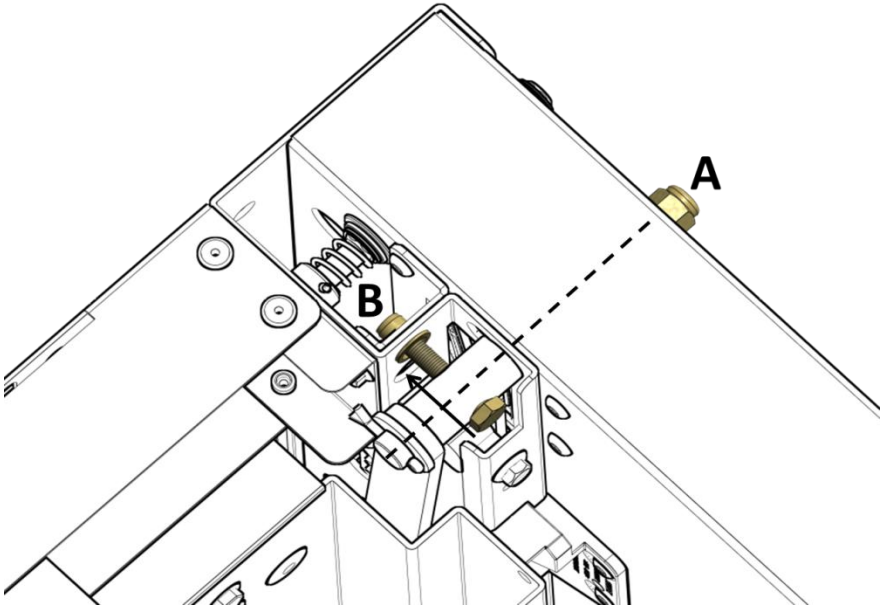


Figure 4-7

4.5 Lubrication

The sliding/rotation parts come pre-lubricated. However, if lubrication should not be satisfactory, consider lubricating the following parts with Lithium Base Grease EP2 as shown in Figure 4-8:

A. Strikers;
B. L and R cable hangers;
C. L and R rollers;
D. L and R, upper and lower lifting arm joint;
E. L and R, upper and lower connecting arm joint.

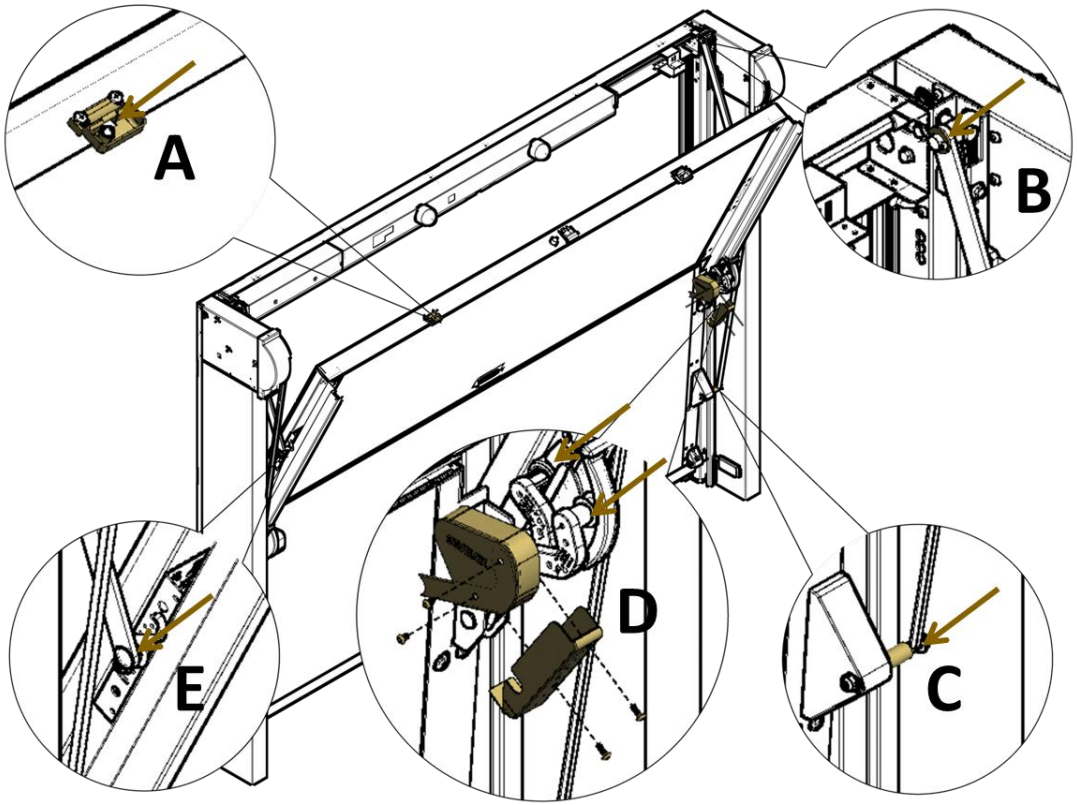


Figure 4-8

4.6 Operator

Operator control parameters are set correctly which results in a smooth door operation.
IF NOT, see adjustments instructions of Section 5.4.

4.7 Current control

The "Amperostop" current control system works by blocking and reversing the door in presence of obstacles. To test this device, with the door fully open, place a 1-1/2" thick piece of wood (a 2" X 4" laid flat) on the floor in the center of the door. Push the transmitter or wall button to close the door. The door must reverse when it strikes the obstruction. Reset maneuver will follow (see user manual Section 3.4).
IF NOT, contact Silvelox Customare Care.

4.8 Photo-eyes

The photo-eyes work by blocking and reversing the door in presence of obstacles between them. To test this system, standing inside the garage, but safely away from the path of the door, use the remote control or wall button to close the door. As the door is closing, wave an object in the path of the photoelectric eye beam. If door stops and reverses, the system works correctly. Reset maneuver will follow (see user manual Section 3.4).
IF NOT, contact Silvelox Customare Care.

4.9 Diagnostic LED

The Diagnostic LED (Figure 5-2 on page 49, referenced as number 4) works without signaling any anomalies, i.e. it does not blink.
IF NOT, contact Silvelox Customare Care.

5 ELECTRIC CONNECTIONS AND ELECTRONIC COMPONENTS

5.1 General overview

The electric connections and the electronic components are located in the operator control box, immediately visible on the headbar, if the headbar central cover is not in place (Figure 5-1). The electric connections/components are listed in Table 5-1, referring to Figure 5-2.

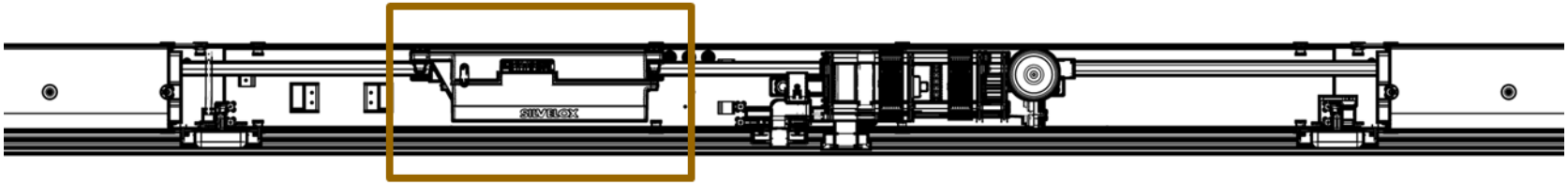


Figure 5-1

Table 5-1

Reference	Description
1	Terminal Block (see Figure 5-3)
2	Built-in Receiver Controls (NOT for USA&Canada)
3	Timer-to-Close (TTC) Control Button
4	Diagnostic LED
5	Voltage LED
6	Configuration Port
7	Courtesy Light LEDs
/	Internal Buzzer (not visible)

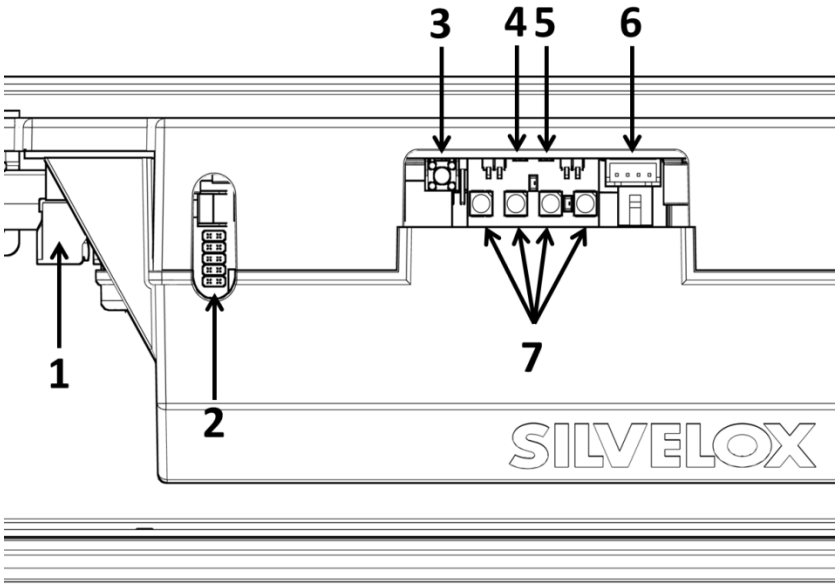


Figure 5-2

5.2 Terminal Block

Safety appliances and/or optional devices have to be connected to the terminal blocks (Figure 5-2 reference number 1). A close view of the terminal blocks is presented in

Figure 5-3 and the contact descriptions are listed in Table 5-2. To facilitate the cable connections it is possible to remove the terminal blocks from their sockets and place them back once the connections are placed. In Section 5.3 the wiring diagram can help to visualize the connections.

WARNING
To prevent possible SERIOUS INJURY or DEATH from electrocution or fire: • Disconnect ALL electric and battery power BEFORE connecting ANY cable to the terminal block.

Table 5-2

CN1 Contacts (Inputs)	**Description**
15 - 14	Left Photoeye (tx)
16 – 13 (purple - grey) 16 – 12 (pink - blue)	Right Photoeye (rx)
8 - 7	Close NO
8 - 5	Stop NC
8 - 4	Open NO
8 - 2	Open / Stop / Close NO
8 - 1	NC
CN2 Contacts (Outputs)	**Description**
11 - 10	2nd Channel Built-in Receiver FC (not for USA&Canada)
9 - 8	External Buzzer (Optional) FC
7 - 6	Home Automation output 1 FC
7 - 5	Home Automation output 2 FC
13 -12	Power 24 Vdc (max 500 mA, 12 W)
13 – 1 bridge 12 - 2	External Flashing Light (Optional) FC
13 – 3 bridge 12 – 4	Supplementary Light (Optional) FC

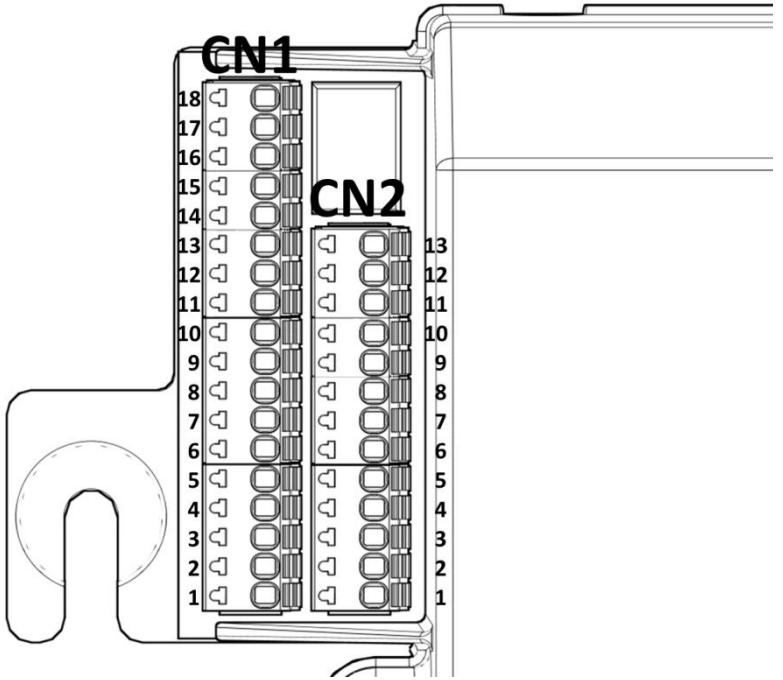
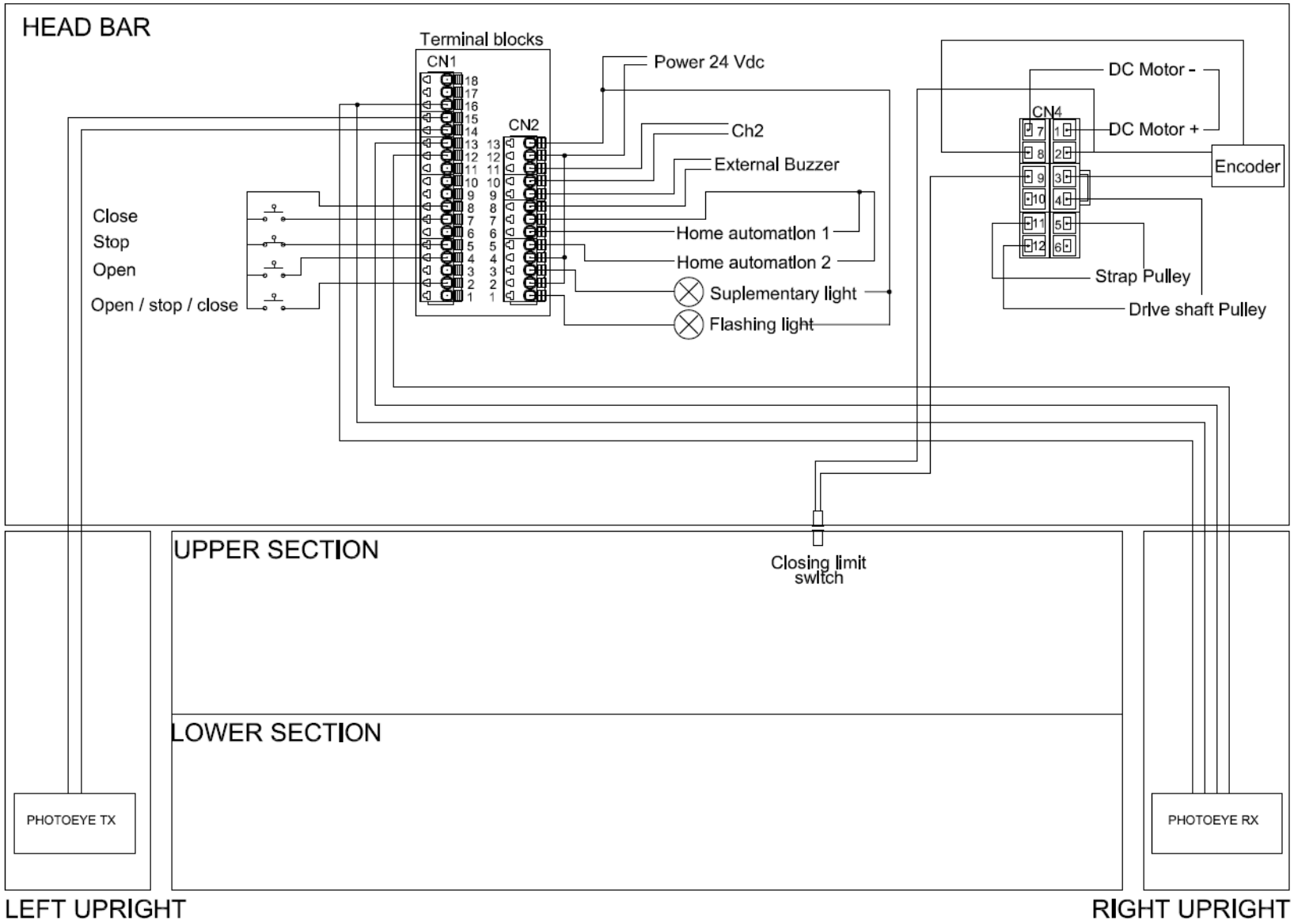


Figure 5-3

5.3 Wiring Diagram



5.4 Door control

The operator parameters listed in Table 5-3 can be controlled using a control kit, composed by a Bluetooth key and a dedicated iOS App, available only to qualified technicians.

- With door closed and connected to the power network, plug the Bluetooth key in the configuration port visible in Figure 5-2, referenced as number 6;
- Start the App from your portable device and follow the instructions provided within the control kit.

Table 5-3

Operator parameters controlled by the dedicated iOS App
Current absorption during operation phases (opening start, opening finish, closing start, closing finish, latch release, panel engagement, cruise)
Current phase timing
Opening/Closing cycle duration
Strap pulley timing
Drive shaft pulley timing
Photoeye timing
TTC setting
Courtesy light setting
External flashing light setting
External buzzer setting

5.5 Timer-to-Close (TTC) adjustment

By default, TTC is set to off. TTC can be set to automatically close your garage door from the fully open position after a specified period of time (1,3,5 or 10 minute intervals). The garage door opener will *Beep* and the courtesy light will *Flash* before closing the door.
To set TTC, please follow the instructions below:

- With door closed and connected to the power, remove the headbar central cover;
- Keep pressed for 3 seconds the TTC Control Button (Figure 5-2 on page 49, referenced as number 3); the Diagnostic LED (Figure 5-2 on page 49, referenced as number 4) will blink 2 times;
- Press the TTC Control Button to set 1 minute closing interval; the Diagnostic LED will blink 1 time;
- Press the TTC Control Button, within 10 seconds from the last operation, to set 3 minutes closing interval; the Diagnostic LED will blink 2 times;
- Press the TTC Control Button, within 10 seconds from the last operation, to set 5 minutes closing interval; the Diagnostic LED will blink 3 times;
- Press the TTC Control Button, within 10 seconds from the last operation, to set 10 minutes closing interval; the Diagnostic LED will blink 4 times;
- Press the TTC Control Button, within 10 seconds from the last operation, to set to off the TTC; the Diagnostic LED will blink 5 times;
- After 10 seconds from the last selection made, the TTC is set.

⚠ WARNING

In case of a voltage interruption during opening or closing, once the voltage is restored, the door remains in the actual position. Close the door manually or perform the reset maneuver (see user manual Section 3.4).

5.6 LEDs description

A total of six LEDs are present in the operator control unit box:

- The Diagnostic LED (Figure 5-2 on page 49, referenced as number 4): it starts to blink (red color) in case of electronic anomalies;
- The Voltage LED (Figure 5-2, referenced as number 5): it turns ON (green color) once the door is plugged to the power network;
- The Courtesy Light LEDs (Figure 5-2, referenced as number 7): it is a group of four white LEDs; once the door is activated, they turn ON and stay ON for 1 minute after that the door operation is completed.

5.7 Internal buzzer

The operator control box is equipped also with an internal buzzer. When the door performs a reset maneuver (see user manual Section 3.4), the internal buzzer will beep for the whole maneuver signaling that the current control is set to a higher, potentially dangerous level and to allow the door to re-define its reference positions.

5.8 Home automation contacts

Two home automation free contacts (FCs) are present on the terminal block CN2 (Figure 5-3 on page 50). Use these contacts to connect the door to home automation system.

- Home automation 1 is active when the door is opening;
- Home automation 2 is active when the door is closing;
- When the door is operated manually or during a reset operation, the contacts are open.

5.9 Optional device prerequisites

The following optional devices can be installed by the dealer:

- External buzzer
- External flashing light
- Supplementary light
- External receiver

These accessories have to be connected on the relays of the terminal block CN2 (see Table 5-2 and Wiring diagram of Section 6.3).
The specifics of the relays are:

- Max 1 A @ 125 Vac (resistive load)
- Max 1 A @ 30 Vdc (resistive load)
- Max 500 mA @ 230 Vac (resistive load)
- Max 500 mA @ 125 Vac (inductive load)
- Max 250 mA @ 230 Vac (inductive load)
- Minimum load: 5 V, 10 mA

In the Wiring diagram of Section 6.3, the flashing light and the supplementary light are powered by the contacts 13-12.This is only a possibility; in this case the absorption of the connected devices cannot exceed the capacity of the power contacts 13-12, which is: 24 Vdc, max 500 mA (12 W). An external source of power might be preferable.

5.10 Remote control (NOT for US&Canada)

The remote operation of the door involves the use of portable transmitters (Figure 5-4). These transmitters can be 2-channels or 4-channels and send the signal to the respective auto-learning receivers (built-in 2-channel receiver or optional 4-channel receiver for outdoor use). The built-in 2-channel receiver is mounted onto the printed circuit board of the motorization and its first channel is used for the open/stop/close function, while the second channel is useable when connected to the terminals of the relay. The external 4-channels receiver (optional) is supplied in a plastic housing and can be installed inside or outside the garage. The transmitters leave the factory “ready for use”, meaning that the cryptographic code of the transmitter is already programmed into the receiver.

The operation is of the impulse type. This means that the open/stop/close function of the garage door is made with a single key (1) of the transmitter: with the first “click” the garage door opens while the next click determines the stopping (while the garage door is still moving) or closing (if the door is entirely opened). The other keys ((2) – (3) – (4)) can be used to remotely control other functions. For example when the second channel is used for activating a light it is required to activate the ON-OFF operation rather than the pulse operation.

5.10.1 Transmitters

The principal technical characteristics of the transmitters are the followings:

- Operating voltage: 3 V = with a button type battery CR2032 LiMn
- Signal frequency: 433.92 MHz
- Operating temperature: -10 / +55 ° C

It is recommended to not submit the transmitter to violent shocks, sources of heat and to direct sunlight.

Figure 5-4

5.10.2 Built-in 2-channel receiver

The 2-channel receiver controls are accessible through the hole in the control unit box (Figure 5-2 referenced numbers 2 and 3). A closer view of them is presented in Figure 5-5, with their description in Table 5-4. The receiver can support 150 transmitters maximum.
To activate the 2nd channel, connect the external device cables to slot 11-10 of the CN2 terminal block (Figure 5-3).

Table 5-4

Reference	Description
i	Jumper to assign the button (1) of the transmitter (operation already performed at the factory)
ii	Jumper to assign the button (2) of the transmitter (operation already performed at the factory)
A	Jumper to entirely cancel all and functions of the receiver (Reset)
B	Jumper to block all functions
C	Jumper to indicate how many transmitters are memorized
D	Self-learning button

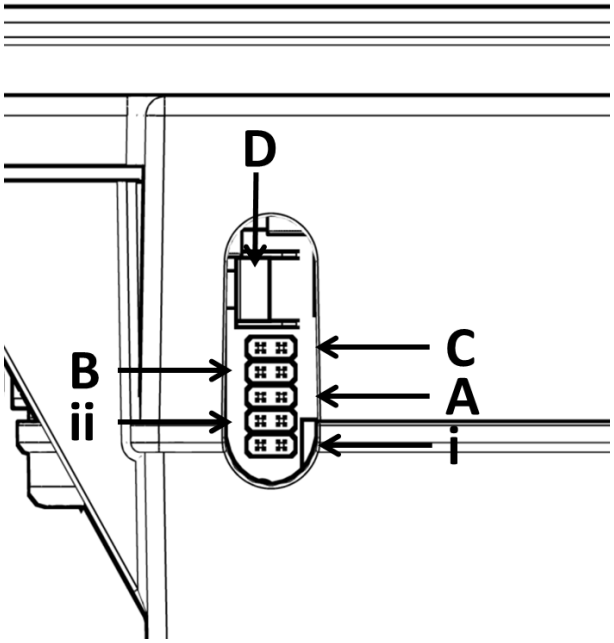


Figure 5-5

5.10.3 4-channel receiver (OPTIONAL)

The external 4-channels receiver is mounted in an ABS plastic housing for an optimal protection against atmospheric agents. It can work together with the 2-channels receiver present on the door, to offer the maximum number of remotely controlled devices. Please refer to Figure 5-6, Table 5-5 and Table 6-6 for a detailed view and description of the receiver components.
It is possible to fasten the receiver to a wall or on a pole (or a suitable bracket); ensure that the supply voltage is either 12 or 24V DC.
If problems are encountered with signals reception, it is necessary to install an external antenna which is available on request. The antenna must be installed at the highest point possible and in an area which is free of obstacles. The optimal efficiency is obtained when it is installed on a metal pole or concrete, avoiding materials such as wood or plastic. When the length of the included cable is insufficient, it is recommended to replace it entirely with a low losses coaxial cable with an impedance of 52 Ohm (type RG58/U) and to not exceed a length of 10 meters.

Table 5-5

Reference	Description
1 to 12	Receiver terminal block
13 - 14	Output terminals for antenna connection (see Table 5-6, page 58)
i	Jumper to assign a button of the transmitter to the relay 1
ii	Jumper to assign a button of the transmitter to the relay 2
iii	Jumper to assign a button of the transmitter to the relay 3
iv	Jumper to assign a button of the transmitter to the relay 4
A	Jumper to entirely cancel all and functions of the receiver (Reset)
B	Jumper to block all functions
C	Jumper to indicate how many transmitters are memorized
D	Self-learning button
E	Red LED

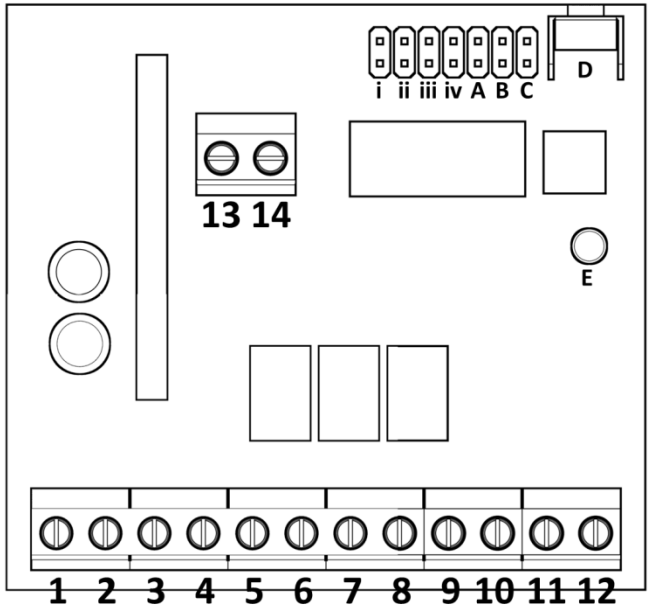


Figure 5-6

NOTE: The buttons (1) and (2) of the transmitter are assigned respectively to the first and second channel of the built-in 2-channel receiver.

In Table 5-6 please find the description of the 4-channel receiver terminal block.

Table 5-6

CONTACTS	DESCRIPTION
1 -2	Power input 12 / 24 Vdc/Vac; terminal 1= (-) ; terminal 2= (+) When 12V power is used, it is necessary to insert the jumper close to the terminal
3 -4	NO relay 1
4 -5	NC relay 1
6 -7	NO relay2
7 -8	NC relay 2
9 -10	NO relay 3
11 -12	NO relay 4
13	Coaxial antenna – shield
14	Coaxial antenna – core
⚠ WARNING	
Devices connections must be carried by an accredited technician. The wiring must be done using cable of 2 x 1 mm2 / max 40 W (relay 1-2-3) or 100 W (relay 4).	

5.10.4 Operation of the receivers (2- and 4-channels)

ON/OFF Mode

The standard operating mode of the transmitter-receiver system is of the impulse type. In other words, when one of the keys of the transmitter is pressed, the corresponding relay on the receiver is closed and when the key is released, the relay is opened again.
In some situations, however, it may be preferable to activate the relay when the key is pressed for the first time, and that it stays activated until the key is pressed again, especially when it is used to activate lighting.
This mode of operation is called “ON-OFF”. To activate this mode it is required to install a permanent bridge on the jumper of the corresponding relay (see Figure 5-5 and Figure 5-6).

WARNING! Never leave a permanent bridge on jumper referenced as “i” in Figure 5-5 of the 2-channel receiver.

Blocking mode

This mode is activated when a permanent bridge is inserted in jumper B of the receiver (see Figure 5-5 and Figure 5-6). In this mode it is no longer possible to insert a code from a distance, activate the ON-OFF mode, or cancel a code.

De-activation of a pushbutton of a transmitter

If necessary it is possible to de-activate the function attributed to a key of a transmitter.
To de-activate the function, proceed as follows:

- Remove the bridges that may be present on the jumpers of the receiver.
- Press the self-learning button of the receiver and keep it pressed.
- Press the pushbutton of the transmitter that must be cancelled.
- Keep the pushbutton pressed until the red LED on the receiver illuminates.
- Release the pushbutton of the transmitter and then the self-learning button.

De-activation of all transmitters (Reset)

In case of theft or disappearance of a transmitter, it is recommended to de-activate the functions of all transmitters in order to avoid unpleasant consequences, by following the steps below:

- Insert the bridge on jumper A of the receiver.
- Press the self-learning button of the receiver for at least 7 seconds.
- Release the self-learning button.
- Wait until the red LED on the receiver is illuminated.
- Remove the bridge of jumper A and place it on the adjacent free pin of the jumper.
  NOTE: this operation must be performed both for the internal 2- and 4- channel receivers.

Restoring the functions of the transmitter keys and restoring another code (2-channel receiver)

- Verify that the garage door is connected to the mains.
- Insert the bridge on jumper “i” (see Figure 5-5).
- Press the self-learning key, D, and keep it pressed.
- Press key (1) of the transmitter and keep it pressed.
- Wait until the red LED illuminates, then first release the key of the transmitter followed by releasing the self-learning button.
- Remove the bridge of jumper “i” of the 2-channel receiver.
- When the second channel is used, repeat the operations from point 2 to 6 for jumper “ii” and key (2).
- Put the bridge on the adjacent free pin of the jumper.

Restoring the functions of the transmitter keys and restoring another code (4-channel receiver)

- Verify that the 4-channels receiver has power on the terminals 1-2 (12-24V DC/AC).
- Insert the bridge on jumper “i” (see Figure 5-6).
- Press the self-learning key, D, and keep it pressed.
- Press the free key on the transmitter which will control relay 1 and keep it pressed.
- Wait until the red LED, E, lluminates, then first release the key of the transmitter followed by releasing the self-learning button D.
- Remove the bridge of jumper “1” of the 4-channels receiver.
- Repeat, if necessary, operations from point 2 to 6 for the next jumpers and free keys on the transmitter.
- When the assignment of all functions and keys is accomplished, put the bridge on the adjacent free pin of the jumper.
- To re-program other transmitters, refer to the instructions in the next paragraph “Activating a new transmitter”.

Activating a new transmitter

It is necessary to have a transmitter that is already functioning and programmed (named “original transmitter”).

- De-activate eventual other receivers installed in the vicinity, by temporarily cutting power.
- Stand within 15 feet from the garage door.
- Press (1) and (2) together of the original transmitter.
- Within 5 seconds, press a key of the transmitter to be activated.
- For eventual other transmitters, repeat the steps described above.

5.11 Remote control (for US & Canada)

The operator is compatible with the Liftmaster 3-Channel Universal Receiver 850 LM which can be connected inside the headbar. The main features of the 850LM are:

- Three channels provide expanded remote control capacity: Channel 1 - 50 remotes, Channel 2 - 20 remotes, Channel 3 - 20 remotes
- Multiple remote control options available to provide secure access from the safety and convenience of a vehicle
- Compact design fits most gate and commercial door operators
- Compatible with 811LM and all MAX remote controls
- Power: 12-24VDC or 12-24VAC
- Narrow-band on 310 MHz, 315 MHz, and 390 MHz Security+ 2.0™ Rolling Code and Encrypted DIP
- Operational temperature from -35 to 65 degrees C; Storage temperature from -40 to 85 degrees C
- Compliant with FCC Part 15

6 MAINTENANCE

For any further detail on the maintenance procedures, read the user manual.

7 DISMANTLING

In case of dismantling, it is necessary to lock the door and disconnect some components to make the door unusable, as: counterweights boxes, pulleys and power plug. To discard, please contact an accredited company following local laws and regulations.

8 ASSISTANCE AND ACCESSORIES

Dear Customer, Silvelox is available for any further explanation. We remind you that in case you will need the assistance of a qualified technician or you will consider to install new accessories for your garage door, you can contact the Silvelox Customer Care. With the purpose to speed up the handling of your inquiry, please provide the serial number of your door (placed in the label above the inner door handle) and fill the suitable form available at www.silvelox.com, in the Customer Service page.

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INSTALLATION MANUAL – MD.75.1.XX
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